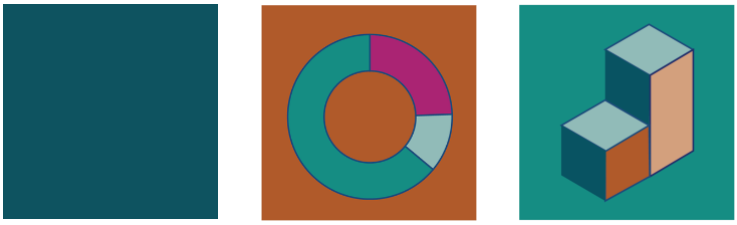

MODULE 2:

USING DATA FOR DECISION MAKING

MODULE 2: USING DATA FOR DECISION MAKING

This module covers the purpose and scope of surveillance, monitoring, and evaluation (SME) for malaria programs and the importance of using data for decision making.

Module Objectives

By the end of this module, you will be able to:

- Identify the purpose and scope of SME
- Describe the importance of using data to inform decisions
- Identify strategies for overcoming barriers and ensuring that health-related data are being used to make decisions

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Introduction to Surveillance, Monitoring, and Evaluation

SME refers to a process by which data are collected and analyzed to provide the information necessary for effective program planning and management.

Table 1. Definitions of surveillance, monitoring, and evaluation

Surveillance	Monitoring	Evaluation
An ongoing, systematic, and continuous assessment of the health of a population, focusing on improving collected information to be used for action	Involves the routine tracking of progress of the implementation of a program's activities and changes in program performance over time. It can be thought of as continuous oversight of the implementation of a program's activities. The purpose of monitoring is to allow the program's stakeholders to understand whether the program is achieving its objectives and using its resources efficiently.	Intends to measure how well the program activities have met their expected objectives and whether the changes in the outcomes observed can be attributed to the program. Evaluation entails the process of determining the worth or significance of a program or intervention.

Quiz Question

Is it monitoring or evaluation? A country director from Ghana is interested in finding out whether scaling up the distribution of insecticide-treated nets (ITNs) and long-lasting insecticide-treated nets (LLINs) and indoor residual spraying in the northern region has had an impact on the number of malaria cases detected in health facilities in the region.

- Monitoring
- Evaluation

Answer: Evaluation. The country director is interested in understanding the impact of the malaria program on reducing the number of malaria cases in the region, which is best measured through an evaluation. Monitoring tracks the program's progress and implementation; it does not measure the impact of a program.

Surveillance

Surveillance is a systematic and continuous approach to collecting data for analysis and interpretation of a health issue for decision making. It consists of four main activities:

- Collecting relevant data
- Aggregating and tabulating data
- Analyzing and interpreting data
- Disseminating and using data and results

Surveillance answers the question: What are we following/tracking?

Examples are events related to health programs (morbidity, mortality, drug efficacy, and insecticide efficacy). Module 11 discusses malaria surveillance in more detail.

Monitoring

Monitoring seeks to establish whether the resources invested (inputs), the activities undertaken, the quality of those activities (processes), and the number of activities performed (outputs) are proceeding according to plan. Monitoring includes the regular collection and analysis of data to assist in timely decision making, aid in program planning and management, ensure accountability, and provide a basis for evaluation and learning.

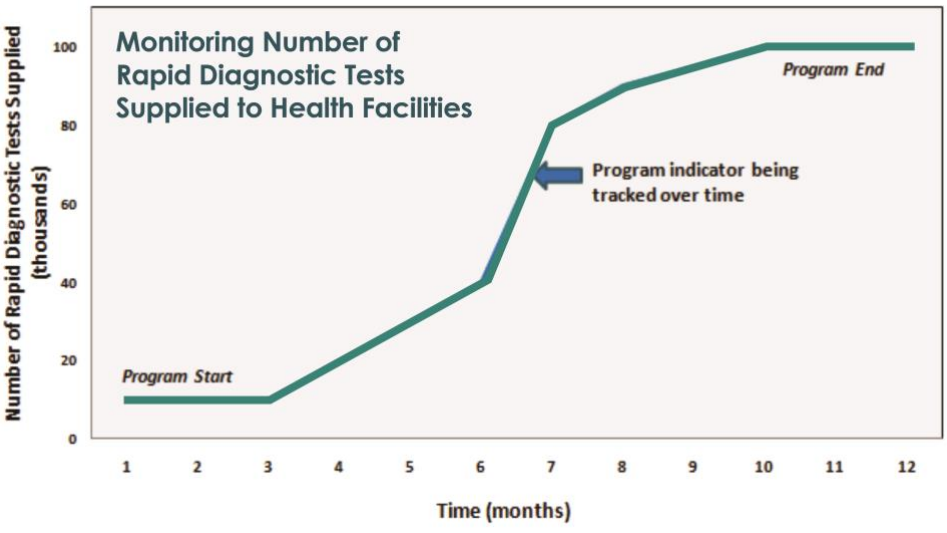
Monitoring can help answer questions such as:

- Was the program implemented according to how it was planned?
- Are the program's activities being implemented similarly across the different sites?
- Is the program making efficient use of its resources?

Monitoring of Malaria Programs

The graphic that follows is an illustration of what monitoring looks like over the lifetime of a program. It shows how a program indicator—for example, number of rapid diagnostic tests supplied to health facilities—is tracked over time—from the start of a program to the end.

Figure 5. An example of an indicator monitored throughout a program



Many components of malaria programs can be monitored. Some examples of common malaria program monitoring activities are as follows:

- Tracking the number of ITNs that have been distributed by the national malaria control program (NMCP)
- Collecting data from health facilities on the number of children under five with malaria who received prompt and correct treatment for malaria
- Reviewing health facility records to track the number of pregnant women who received at least two doses of intermittent preventive treatment during their pregnancy

Evaluation

Evaluation is a process that aims to determine as systematically and objectively as possible the relevance of objectives, the efficiency of resources used, the effectiveness of the program design and implementation, the value added of a program, the sustainability of results, and the impact of a program or intervention. Evaluation aims to provide valuable management information to judge the value of an intervention and provide lessons for future programs or policies.

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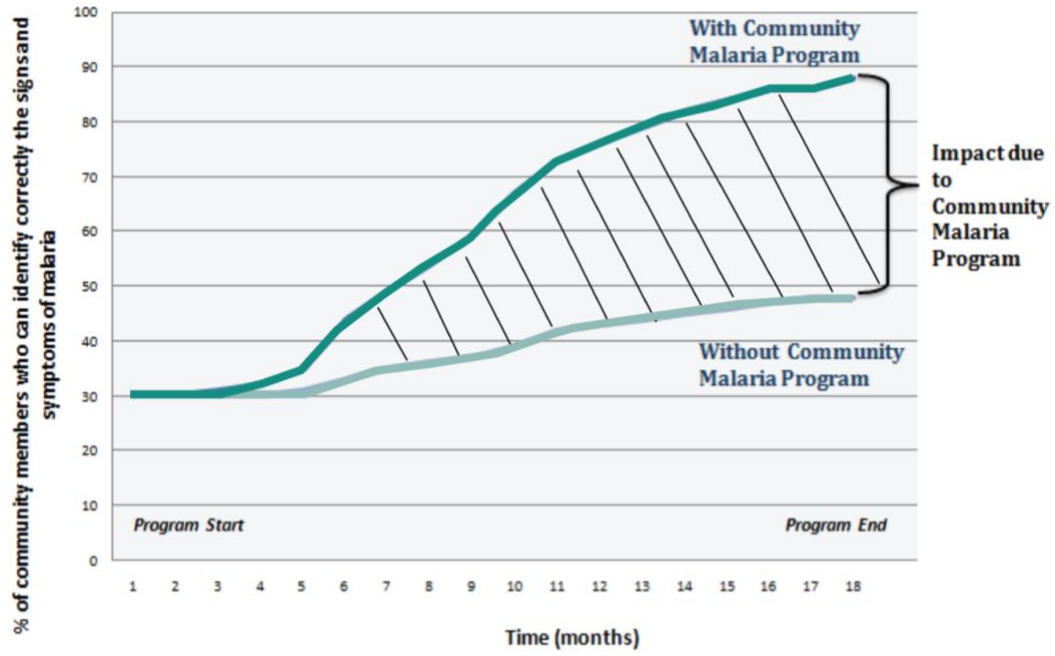
Evaluation can help answer questions such as:

- Did the implementation of the program lead to an improvement in health status among the targeted population?
- Did the program improve access to health services for the targeted population?
- Was the program cost-effective?

Evaluation of Malaria Programs

This graphic illustrates the impact of a program on a specific program outcome.

Figure 6. Illustration of evaluation



For example, if a program achieved its aim to increase the community's knowledge of the signs and symptoms of malaria, then we would observe a positive change in the program outcome (community knowledge of signs and symptoms) that would otherwise not have been observed if the program was not implemented.

The shaded area on the graphic demonstrates the impact the program had on changing the community's knowledge of the signs and symptoms of malaria.

Sample evaluation questions for malaria programs:

- Did the ITN national distribution program in Country X reduce inequity in household ownership of ITNs?
- Was the program effective in increasing the population's knowledge of the proper use of ITNs?
- Did the program's activities to increase access to artemisinin-based combination therapy (ACT) treatment for children under five lead to a decrease in malaria-specific mortality among children under five?

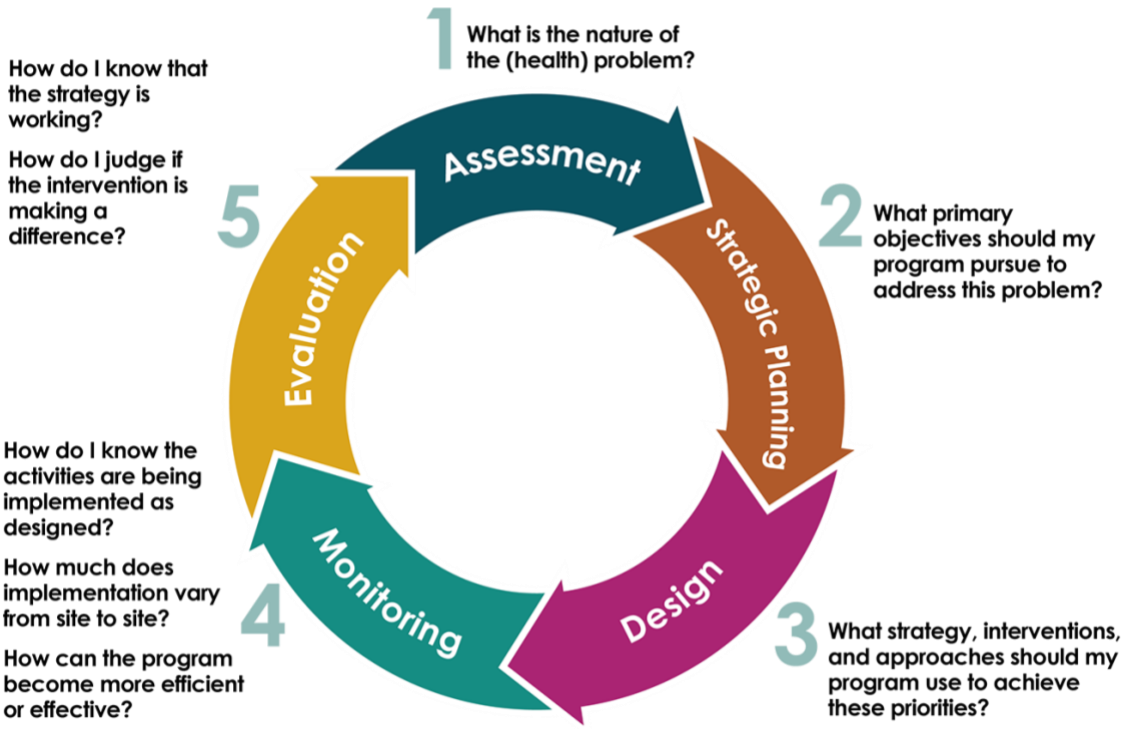
Role of SME in the Program Lifecycle

SME is a continuous process that occurs throughout the lifecycle of a program. An SME plan should be developed at the beginning of a program and should include input from all the relevant stakeholders. If there are any changes in the program over time, the SME plan must be modified accordingly. It is important to remember that an SME plan is a living document and can be changed over time based on the program's needs.

Unlike monitoring, which involves the routine collection of data, evaluation takes place during specified periods of a program. It might take place annually, midway through a program, or at the end. It is important to remember that for an evaluation to be successful, it MUST be planned from the beginning of a program to ensure that the appropriate data are collected to carry out the evaluation. Surveillance can

take place at any time and consists of a continuous analysis and interpretation of data on health issues for decision making.

Figure 7. Program lifecycle



Source: MEASURE Evaluation

Assessment

Prior to designing a program, it is vital to understand the nature of the (health) problem you want to address. Conducting an assessment of the problem in the specific population you want to engage with your program can help you identify the nature and severity of the problem. The assessment will provide you with the information and data you will need to begin strategically planning and designing your program.

Strategic Planning

The second phase in the program lifecycle is to begin planning your program, specifically what the program would like to achieve. The data and information that you collected during the initial assessment will help you understand the nature of the problem in the community as well as what is feasible in terms of addressing the problem. At this stage, you will determine the goal and primary objectives of your program.

Design

The third phase in the program lifecycle is designing your program. The data and information gathered during the assessment will also inform the design of the program. At this stage, you will decide on the different strategies, activities and interventions, and approaches that the program will implement to achieve its goal and primary objectives.

Monitoring

Monitoring occurs throughout the program, from the beginning to the end. It involves the regular collection and analysis of data to assist in timely decision making, aid in program planning and management, and provide a basis for evaluation and learning. Monitoring helps you determine whether your program's activities and interventions are being implemented as designed, whether implementation is consistent throughout different implementation sites, and whether the program can be more effective or efficient.

Evaluation

Evaluation typically occurs during certain periods of a program's lifecycle, for example annually, midway through the program, and at the end of the program. Evaluation should be planned at the beginning of a program. It will help you determine whether your program's strategy is working effectively and if it is making an impact. It allows you to assess whether the program has achieved its objectives and overall goal, and, if not, it helps you understand why.

Uses of Data

Data have many important uses. Primarily data should be used to inform decision making, which occurs at multiple levels—from the programmatic level to the policy level. Some examples of how data collected from a program or an intervention can be used are as follows: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- To help to inform policies, planning, or program decisions
- To raise additional resources for scale-up of programs or for future programs
- To assess whether a policy, plan, or program has produced the desired or intended impacts
- To strengthen programs by improving their results, their efficiency, and the quality of services provided
- To identify factors or interventions that influence health outcomes
- To ensure accountability and for reporting purposes
- To contribute to global lessons learned that can aid other malaria control and prevention programs in implementing effective programs

"…without information, things are done arbitrarily and one becomes unsure of whether a policy or program will fail or succeed. If we allow our policies to be guided by empirical facts and data, there will be a noticeable change in the impact of what we do."
—National-level policymaker, Nigeria

Data for Decision Making

Decision making occurs at all levels of a program and among all of a program's stakeholders. Because of this, each stakeholder requires different information and data to be able to make informed decisions. It is important to engage stakeholders in discussions from the beginning of your program to fully understand all the decisions they make and what the information they will need to make those decisions.

Even though each program will vary, the following table presents an example of all the different stakeholders (and thus decision makers) in a malaria control and prevention program and the types of information they may need to make informed decisions.

Table 2. Malaria program stakeholders and their information needs

Decision Maker	Information Needs
Beneficiaries	Effectiveness of program or intervention, quality of services provided
Community Leaders/Local Government Officials	Effectiveness of program or intervention; quality, equity, and coverage of services provided; who are the clientele
Program Managers/Implementation Partners	Effectiveness of program or intervention; who are the clientele; quality, equity, and coverage of services provided
Policymakers	Quality and equity of services, cost-efficiency and effectiveness of program or intervention, information relevant for correcting and improving policy
Partner Agencies	Effectiveness of program or intervention, policy implications, sustainability of program, cost-efficiency and effectiveness

Stakeholder Decision Making

A common misconception is that data are collected only to be used at the top management levels; however, stakeholders at all levels need and use information. Stakeholders at each level make decisions that require different types of information. This section provides examples of decisions made by all the different stakeholders.

Beneficiary level: A family decides whether to take their child with a fever to the clinic based on their impression of the quality of care received during past visits.

Community level: A health facility director decides how many drugs and supplies to order based on health facility use data on average number of monthly malaria cases.

Program management level: A program manager decides where to focus LLIN distribution campaigns based on malaria endemicity levels.

Policy level: The Ministry of Health decides on new antimalarial policy based on evidence demonstrating which antimalarial drugs have the highest efficacy.

Global level: Global partners decide whether to allocate funding to a specific grant based on the effectiveness of the intervention and past program performance.

Common Barriers to Data Use

There are a number of common barriers to data use within organizations. It is important to recognize the barriers that your organization faces regarding data use to help identify solutions and create an environment that promotes and facilitates data use within your organization.

Common barriers that organizations can face include the following:

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- Organizational structures within a program can be a constraint to efficient data management processes.
- Decision makers may not be accustomed to using data to inform their decisions.
- Staff may have low motivation.
- Staff may have limited capacity in SME and technology use.
- Training on SME is often ad hoc and does not provide refresher courses or coaching to keep skills current.
- Structural constraints may exist within the country, such as poor roads or telecommunication.
- Staff roles may not be clearly defined.
- Poor information flow may exist within the organization.
- Funding for SME may be limited or insufficient.
- Politics may influence decisions on what data can or should be collected.
- The program may have limited access to computer technology for tracking and analyzing data.

Case Study: Common Barriers to Data Use

Read the following short vignette on a local malaria program in Western Kenya. While reading the vignette, consider what constraints or barriers the local nongovernmental organization (NGO) faces regarding data use and what could be done to improve data use in this situation. After you have read the vignette, go to the next page to answer a few questions regarding the barriers to data use described in the scenario.

Over the past few years, a local NGO in Western Kenya has been working in partnership with the NMCP to implement a vector control program in its community. The NGO helps coordinate and carry out ITN distribution campaigns in the community and provides education and assistance to families in the surrounding villages to hang ITNs appropriately, in addition to carrying out social and behavior change communication (SBCC) activities to help promote the use of ITNs and seeking of prompt treatment for malaria. The program has been running smoothly for the past three years, has distributed more than 150,000 ITNs, and has carried out a number of great SBCC activities in the community. The program has been well-received in the community, receiving praise from the local community leaders.

The NGO's SME officer, Thomas, is responsible for collecting various data for the malaria program, including data on the number of ITNs distributed, the number of families assisted, the number of households that have ITNs, and the number of people reached with SBCC activities, among others. On a quarterly basis, Thomas aggregates the program's data from the previous quarters and prepares a summary report that he sends to the program manager, Florence. Thomas never receives any feedback on his reports from Florence, so he assumes he is doing a good job and continues to carry out his work in the same fashion. Florence looks over the quarterly reports for any clear mistakes before sending them to the NGO's central office in Nairobi. Florence never receives any feedback from the central office after submitting the reports, and therefore she assumes her program is on the right track and progressing well. If there is a way her program could improve its daily operations, she expects that this would be communicated to her from her supervisor at the central office in Nairobi.

At the NGO's headquarters in Nairobi, the SME manager aggregates the data from all the community-level reports and writes a summary report that is submitted to the NMCP in the Ministry of Health. After the NMCP receives the report, data are extracted from the report and aggregated across all malaria prevention and control programs in the country. A final report is created on the progress of all malaria control and prevention activities in Kenya and sent to the respective donor agencies. Based on the findings of the report, donor agencies engage in discussions with the NMCP to decide which programs to continue funding in the future. At this quarter's meeting, the donors note to the NMCP that although a lot of funding has been provided to the local NGO in Western Kenya for malaria prevention activities for the past three years, the number of malaria cases and deaths has not fallen. Based on this information, the donors and the NMCP decide that the program must not be performing well.

Case Study Questions

Answer the following questions about the case study on the previous page.

- What are the main barriers to data use that you see in this scenario?
- Do you think the decision of the donors and the NMCP that the program was performing poorly was accurate?
- What recommendations would you provide to improve the use of data in this situation?

Case Study Answers

What are the main barriers to data use that you see in this scenario?

The main barrier in this scenario is that the local NGO program staff view data collection as more of a reporting requirement, rather than viewing the process as useful for informing how to improve their program or to track whether their program is achieving its set goal and objectives. It is common for data to be collected and sent to higher levels in the health system, and not considered or used at the local or district levels to make decisions about future program or service delivery. This barrier could be due to a lack of culture of data use in general across the multiple levels.

Another barrier is the lack of a feedback mechanism at all levels. After the information has been submitted to the next level, there is limited or no feedback to the lower levels in the system. In this scenario, we can see that this lack of feedback causes the program staff to wrongly assume that their program is on track and performing well.

Although not elaborated on in the scenario, it is possible that program staff in the NGO have limited SME skills. Staff might be trained in data collection only, and not necessarily in how to analyze data or how to effectively present and use data for decision making.

Do you think the decision of the donors and the NMCP that the program was performing poorly was accurate?

It is hard to tell whether the decision of the donors and the NMCP was accurate in this instance, because we are not given any specific information on which data they used to inform their decision. We are only told that the data are aggregated at the various levels, and we are not sure what information is actually available and being used to inform the decision. Thus, it could be that there is poor interpretation of the data or insufficient data to make an informed decision at this high level. Or the program may not be not performing well, as the donors and the NMCP assume. This highlights another issue around data use—that data can be used inappropriately to make decisions.

What recommendations would you provide to improve the use of data in this situation?

To improve data use in this situation, it might be important to first take time to build the capacity of the NGO in SME, specifically in effective data presentation and data use. This can help build a culture of data use in the organization by ensuring that data are shared within the organization among staff and in an effective way that facilitates data use. This will ensure that the program is not reliant on receiving feedback from other levels for input on the program's progress.

Although it is important to improve the culture of data use within the organization, it is also important to create a culture of data use among all program stakeholders. This can be done by regularly sharing program findings with all program stakeholders and asking for input and feedback on how to improve the program based on the findings. This ensures that all stakeholders are aware of the progress of the program and are able to quickly identify whether the program is not performing according to expectations.

Increasing Data Use

A good SME system allows for timely and effective use of data. Collecting data is a worthwhile effort only when the data collected are used for decision making. Although organizations face a number of common barriers in using data, there are many actions they can take to help increase the demand and use for data. Some examples of these actions include the following:

Monitoring progress in Kenya
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- Involving program staff in monitoring and evaluation activities, such as in data collection and data review
- Building organization capacity in data management and use
- Being sure to package information in user-friendly formats that facilitate use of the information
- Sharing findings and recommendations with all relevant stakeholders and providing them with timely and regular reports
- Ensuring good data quality, consistency in the indicators used, and that data are available at all the relevant levels
- Developing realistic recommendations from data gathered on ways to improve the program
- Developing an action plan that details how to implement the recommendations from the data
- Linking the allocation of resources to performance monitoring

Can you think of any other effective ways to increase data demand and use in your own program?

Success Stories

Since the 1980s, resistance to chloroquine for treatment of malaria caused by *P. falciparum* in malaria endemic areas has risen dramatically, with increasingly higher treatment failure rates found across many countries throughout Africa, Asia, and Latin America. The emerging amount of evidence of widespread resistance to chloroquine, in addition to documented increases in morbidity and mortality due to malaria, led many NMCPs to decide to take action to change their current national drug policy for malaria treatment. By gathering and sharing evidence with stakeholders, many NMCPs were able to start a process in their countries to change and implement new national drug policies. In Africa, Zambia was the first country to use the evidence to push for the change.

Zambia: Malaria Drug Policy Change

In 2002, Zambia implemented a national drug policy change to ACTs for first-line treatment of malaria. Based on evidence of increasing malaria morbidity and mortality in Zambia over the previous two decades and from multiple studies carried out from 1995 to 2000 in sentinel sites across Zambia that demonstrated the decline in efficacy of chloroquine, Zambia initiated the process to develop and implement a new national drug policy. Due to the recognized challenge of implementing a national policy change, the country formed a Drug Technical Advisory Group to develop a technical framework and advocacy strategy for implementing the drug policy change. Upon review of the evidence, the Advisory Group concluded that immediate action was required to change the first-line therapy, as well as to ensure access to the treatment. After the decision was made, efforts focused on developing new treatment guidelines, training materials, and plans detailing how the new policy would be implemented. Although not without its challenges, the successful implementation of the policy change and additional increased vector control activities resulted in a dramatic decrease in malaria cases and deaths in Zambia by 2008.

Example of ACTs and RDTs

Many other countries across Africa, Asia, and Latin America also used the same strategy, leading to the successful use of evidence to advocate and inform the development of a new drug policy. As of 2016, ACTs have been adopted as a national policy for first-line treatment for malaria in 80 countries where *P. falciparum* is endemic.

Senegal: Progress toward Elimination

Senegal's focus on malaria elimination has historically been one of Senegal's major health challenges. Less than two decades ago, malaria accounted for one-third of outpatient visits nationwide. Today, Senegal has one of the lowest malaria incidence rates in West Africa, a rate which continues to fall. There was a 30 percent reduction in cases between 2015 and 2016 due to scale-up of key interventions by the National Malaria Control Program and its partners.

In fact, Senegal's progress has been so pronounced that there are now several northern districts where local transmission has been interrupted and where elimination appears to be achievable soon. The country is now conducting malaria case notification and investigation in these areas, which is the next step to reach elimination. Senegal's substantial and sustained progress in controlling malaria is an inspiring public health success story and a source of potential lessons for other countries on the path to elimination.

Module 2 Assessment

Questions

Correct answers are provided on the next page.

1. Which of the following questions would be best answered by an evaluation?

    a. How many pregnant women attending the health facility during the last month received a dose of intermittent preventive treatment during their routine antenatal care visit?
    b. What percentage of households did the program cover with indoor residual spraying during the past year of program implementation?
    c. Did the program's distribution of long-lasting insecticide-treated nets (LLINs) reach the poorest quintile in Community X?
    d. How many LLINs were distributed each month by the National Malaria Control Program?

2. *True or False:* Surveillance, Monitoring and evaluation is a continuous process that occurs throughout the lifecycle of a program.

    a. True
    b. False

3. The Ministry of Health in Uganda would like to know whether the malaria programs being carried out in the Northern region of the country are increasing insecticide-treated net use among pregnant women and children under five in that region. This question could be answered by which of the following?

    a. Monitoring
    b. Evaluation

4. At what level are data needed for decision making? *(Select all that apply.)*

    a. Beneficiary level
    b. Program level
    c. Policy level
    d. Partner agency level

Correct Answers

Correct answers are noted in bold.

1. Which of the following questions would be best answered by an evaluation?

   c. Did the program's distribution of long-lasting insecticide-treated nets (LLINs) reach the poorest quintile in Community X?

   This question deals with understanding how effective the program was in targeting the distribution of LLINs to those that have the greatest need; therefore, it would be answered through conducting an evaluation. Routine program monitoring data do not typically collect more detailed information, like socio-economic status, on the beneficiaries of the program that would be necessary to answer this question.

2. *True or False:* Surveillance, monitoring and evaluation is a continuous process that occurs throughout the lifecycle of a program.

   a. True

   Surveillance, monitoring and evaluation occurs throughout the lifecycle of a program; not just at the beginning or end of a program, or at specified times.

3. The Ministry of Health in Uganda would like to know whether the malaria programs being carried out in the northern region of the country are increasing insecticide-treated net use among pregnant women and children under five in that region. This question could be answered by which of the following?

   a. Evaluation

   This question deals with understanding the impact of the Ministry of Health's malaria programs on insecticide-treated net use among the targeted population, pregnant women, and children under five in the northern region. Monitoring data will not be able to provide an answer to this question; an evaluation will be required.

4. At what level are data needed for decision making? *(Select all that apply.)*

   a. Beneficiary level

   b. Program level

   c. Policy level

   d. Partner agency level

   Data are needed at all levels: beneficiary, program, policy, and partner levels.