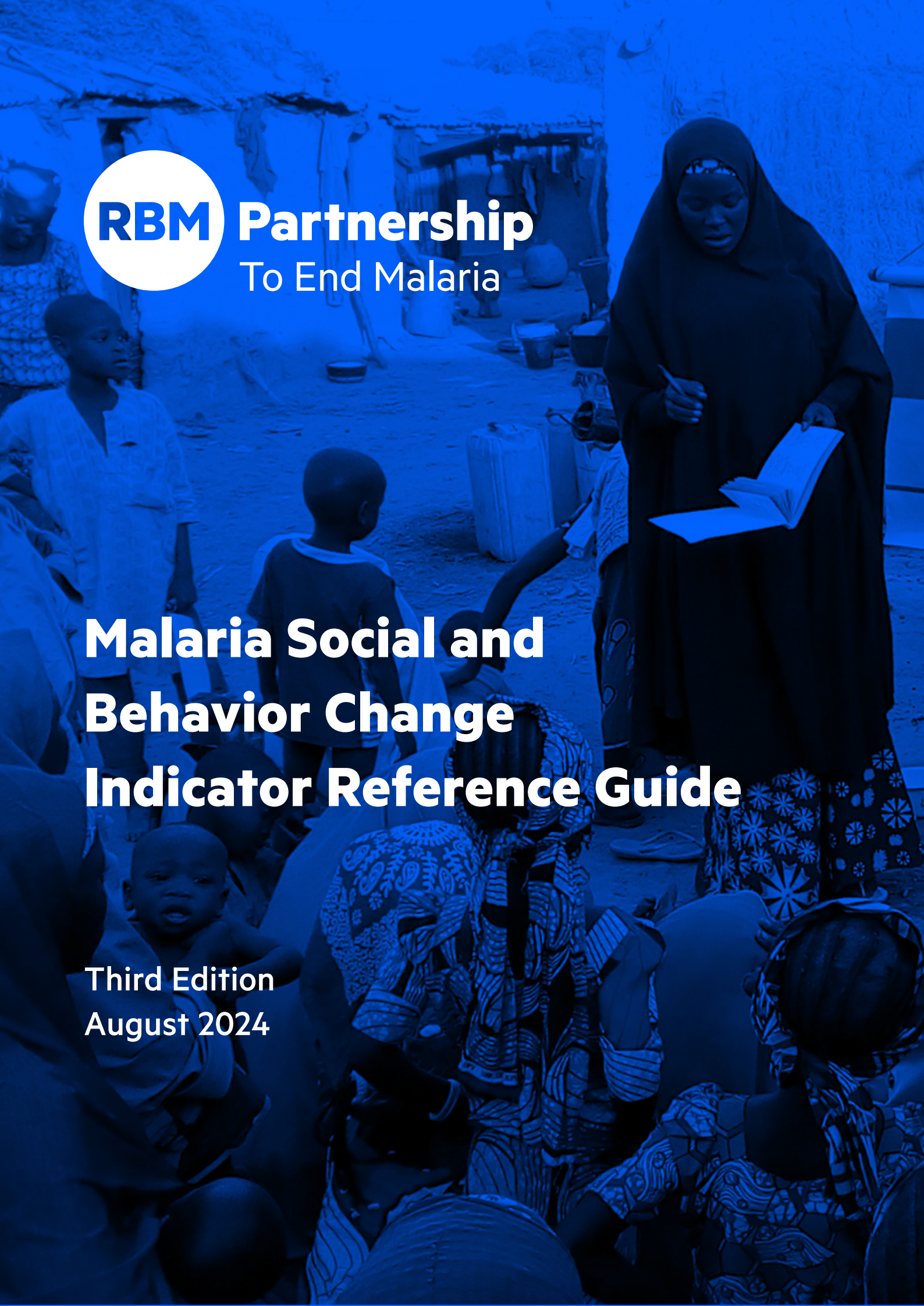


RBM Partnership To End Malaria

Malaria Social and Behavior Change Indicator Reference Guide

Third Edition
August 2024

Acknowledgements

This guide is a product of the concerted collaboration of many malaria social and behavior change partners over the years. The editors of the third edition are Angela Acosta and Michael Toso. Past editors included Hannah Koenker, Jessica Butts, and Janita Bhana.

Much appreciation is owed to the individuals who contributed valuable content and their time to review and provide helpful feedback. For the third edition, these included Shawn Kerry, Shelby Cash, Bridget Higginbotham, Caroline Kusi, April Monroe, Gabrielle Hunter, Kate Rodriguez, and Andrew Tompsett. Contributors to previous editions included Martin Alilio, Marc Boulay, Debra Prosnitz, Hibist Astatke, Susan Zimicki, Joe Keating, Marcy Erskine, Sandrine Martine, Stella Babalola, Andrew Tompsett, Grace Awantang, Matthew Okoh, Anisa Saleh, Anna McCartney-Melstad, Naira Kalra, and Farah Ndiaye. They and other reviewers represented the following organizations: Abt Associates, American Refugee Committee International, Chemonics, FHI 360, ICF International, International Federation of the Red Cross and Red Crescent Societies, Johns Hopkins Center for Communication Programs, Malaria Consortium, Malaria No More, Manoff Group, Population Services International, U.S. President's Malaria Initiative, Society for Family Health, Speak Up Africa, Tulane University School of Public Health and Tropical Medicine, United Nations Children's Fund, and the national malaria programs from several countries, including Burkina Faso, Madagascar, Malawi, Nigeria, Sierra Leone, and Zambia.

Breakthrough ACTION is funded by the U.S. Agency for International Development (USAID) and U.S. President's Malaria Initiative under the terms of Cooperative Agreement No. AID-OAA-A-17-00017.

Suggested citation: RBM Partnership to End Malaria. (2024). *Malaria Social and Behavior Change Indicator Reference Guide: Third Edition.* RBM.

Table of Contents

Acronyms

ACT	Artemisinin-Based Combination Therapy
ANC	Antenatal Care
CHW	Community Health Worker
DHS	Demographic and Health Survey
EPPM	Extended Parallel Processing Model
HMIS	Health Management Information System
IPTp	Intermittent Preventive Therapy of Malaria in Pregnancy
IRS	Indoor Residual Spraying
ITN	Insecticide-Treated Net
IVR	Interactive Voice Response
KAP	Knowledge, Attitudes, and Practices
LMIS	Logistics Management Information System
M&E	Monitoring and Evaluation
MBS	Malaria Behavior Survey
MICS	Multiple Indicator Cluster Survey
MIS	Malaria Indicator Survey
RBM	RBM Partnership to End Malaria
RDT	Rapid Diagnostic Test
SARA	Service Availability and Readiness Assessment
SBC	Social and Behavior Change
SBCC	Social and Behavior Change Communication
SMC	Seasonal Malaria Chemoprevention
SMS	Short Message Service
SP	Sulfadoxine-pyrimethamine
SPA	Service Provision Assessment
USAID	United States Agency for International Development
WHO	World Health Organization

Introduction

What is social and behavior change?

Social and behavior change (SBC) is a systematic and intentional process to understand and facilitate change in behaviors and the factors that influence those behaviors. These factors may include exposure to an SBC program, personal beliefs or attitudes, social interactions, physical access, or a health service experience, among others. SBC seeks to empower individuals, households, and communities to adopt and sustain positive health behaviors. SBC programs draw from various disciplines and approaches such as social psychology, communication science, behavioral science, human-centered design, marketing, and community engagement.

Social and behavior change communication (SBCC) is a subset of the universe of SBC programs. SBC activities can take multiple forms, from multi-channel communication campaigns, repackaging malaria medications to improve treatment completion rates, changing a facility's workflow to improve providers' adherence to case management guidelines, implementing community action plans, creating feedback loops between facilities and communities, and many others. However, SBCC refers specifically to the use of communication approaches (such as community dialogues, radio, and television) to change behavior.

What does this guide contain?

This guide contains a list of recommended indicators for malaria SBC programs. These indicators have been carefully curated to provide a comprehensive and standardized framework for measuring the impact of SBC programs. While the indicators offer a valuable roadmap for assessing program effectiveness, it is important to note that they are recommendations, not requirements. The RBM SBC Working Group recognizes the diverse nature of SBC programs and that specific contexts have nuances that may necessitate the use of additional or alternative indicators. This guide is intended to streamline the process of selecting and using indicators, save valuable time and resources, and foster a shared language for communicating SBC programs' contributions. These recommendations are designed to empower organizations and individuals to tailor their measurement approaches to their specific needs while still benefiting from a common foundation of essential data points.

In addition to the indicators, the guide contains responses to frequently asked questions about how to select and adapt indicators; potential data sources; reference sheets describing the measurement, interpretation, strengths, and limitations of indicators; and sample questions for data collection.

Credit: USAID/RTI: StopPalu+

An aunt and her niece pictured outside after receiving seasonal malaria chemoprevention (SMC) in Guinea.

How to use the Indicator Reference Guide

This guide provides SBC and monitoring and evaluation (M&E) staff, researchers, government personnel, and donors with indicators and data sources for tracking the results of malaria SBC programs. It aims to

- Compile indicators that stakeholders have found useful.
- Define these indicators so they can be used consistently.
- Identify relevant data sources.
- Facilitate SBC M&E by making indicators and survey questions available in one place.
- Provide examples and suggestions for choosing indicators, tailoring them for local contexts, and using them for monitoring and/or evaluation.

Readers can use the guide to:

- Select indicators and data sources for M&E plans and funding proposals.
- Collect data to inform the development of an SBC activity.
- Communicate the goals of an SBC activity to stakeholders.
- Monitor intermediate outcomes to modify programs for maximum impact and share those results.
- Collect data to assess the results of the program.
- Compare results over time and across programs.

This document can be used in conjunction with Developing M&E Plans for Malaria SBC Programs: A Step-by-Step Guide, which offers a template for developing M&E plans for SBC.

While this guide provides information on indicators for tracking the results of SBC programs, it does not encompass the entirety of malaria SBC data needs. Other indicators that may be useful in planning or assessing an SBC activity are not directly addressed in this guide. Specifically, the authors of this guide recognize that health provider behaviors—and factors that influence those behaviors—play a critical role in malaria prevention and treatment. This guide considers health providers as a target audience for which behaviors and behavioral factors can be measured, but further work is needed to develop the best approaches to measure the determinants of health provider behaviors, including those influencing adherence to national guidelines for case management and prevention of malaria in pregnancy, reporting, supply chain management, and so on. Part 3 contains information and examples of how to select and adapt the provided indicators for providers.

How this guide was developed

In 2011, 15 organizations[1] initiated the effort to develop standard malaria SBCC indicators by sharing their survey tools. In 2012, an expert committee grouped the indicators into constructs/themes provided by social and behavioral theory and compared them with the SBCC indicators in the Family Planning and Reproductive Health Online Indicators Database and the Household Survey Indicators for Malaria Control. Indicators were selected based on criteria such as evidence, alignment with behavioral theory, and utility for malaria SBC programs, and guidance on the indicators' definitions, measurement, and use were developed. Following a review of the guide by members of the RBM SBC Working Group, the first edition was launched in 2014. The second edition consolidated the indicators by removing the experimental indicators section, presented a list of prioritized indicators, added process indicators, provided guidance for prioritizing and adapting indicators, and added an annex on theory. Evidence shows that this parsimonious set of indicators remains effective for identifying factors associated with malaria behaviors. This third edition reflects the evolution of the field from SBCC to SBC, includes a comprehensive list of data sources, provides considerations regarding provider behavior change and the impact of SBC on the enabling environment, includes updated survey questions based on multi-country scale validation tests, and offers streamlined guidance for prioritizing and adapting indicators.

[1] Abt Associates, American Refugee Committee International, Chemonics, FHI 360, ICF International, International Federation of the Red Cross and Red Crescent Societies, Johns Hopkins Center for Communication Programs, Malaria Consortium, Malaria No More, Manoff Group, Population Services International, U.S. President's Malaria Initiative, Society for Family Health, Speak Up Africa, Tulane University School of Public Health and Tropical Medicine, United Nations Children's Fund, and the national malaria programs from several countries, including Burkina Faso, Madagascar, Malawi, Nigeria, Sierra Leone, and Zambia.

Framework for the M&E of Malaria SBC Programs

Types of indicators

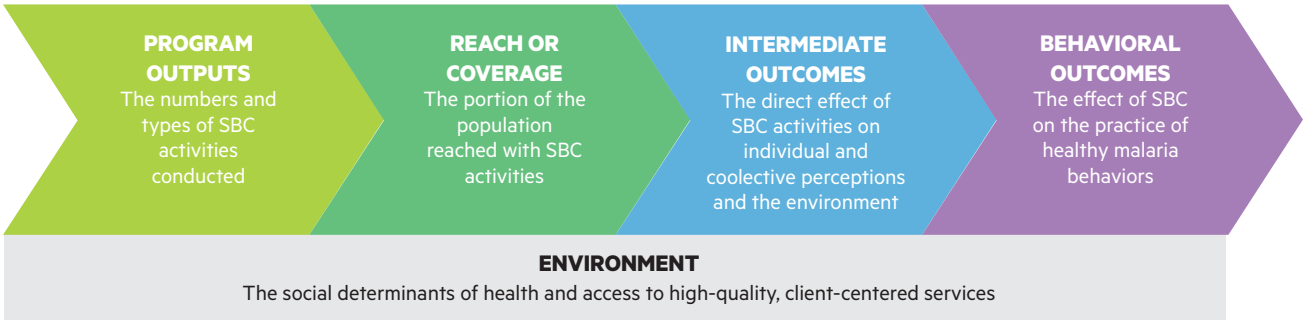
This section summarizes the indicators and shows how they are connected to each other. M&E frameworks illustrate how programs are supposed to work. They are helpful for thinking through programmatic objectives and understanding whether the planned activities are the most appropriate ones to use. As noted earlier, the indicators below were selected due to their basis in behavioral theory (see Annex 1 for examples). It is strongly recommended that all activities and their M&E frameworks also be grounded in behavioral theory because such theories provide insights into the decisions, motives, barriers, and facilitators associated with change.

Figure 1 summarizes the types of indicators that M&E plans for malaria SBC should include.

The framework groups indicators by result levels:

- **Program outputs.** These indicators reflect the numbers and types of SBC activities completed. Documenting outputs can help reveal whether the number and types of activities conducted were adequate to reach a sufficient percentage of the target population. When program output data is accompanied by qualitative descriptions of the design process, approaches used, and quality assurance measures deployed, SBC programs can demonstrate rigor in design and implementation (see **best practices for reporting**, in the Developing M&E Plans for Malaria SBC Programs: A Step-by-Step Guide.
- **Reach or coverage.** Reach and coverage represent the percentage and number, respectively, of the intended population that has received, participated in, benefited from, or been exposed to program activities. The new indicator in this third edition reflects the fact that SBC often involves community groups, facilities, providers, and individuals in improving service utilization.
- **Intermediate outcomes.** The indicators at the intermediate level assess the direct effect of SBC activities on areas that contribute to behavior change. These indicators are most frequently derived from behavioral theory. They can include results at the individual (e.g., self-efficacy), collective (e.g., community dynamics and social norms), and environmental levels (e.g., access to equitable services). Decades of research have shown that knowledge is not the only determinant of behavior. Perception of risk, response efficacy, self-efficacy, social norms, attitudes, community capacity, intention, and other psychosocial factors are also associated with an increased likelihood of behavior change. The more psychosocial factors in favor of the behavior that are present, the more likely the individual is to change. SBC can also influence the enabling environment by supporting groups to mobilize resources and change organizational policies and processes to increase access to services or improve the quality of services. For this reason, changes to the enabling environment can also be considered intermediate outcomes of SBC and should be included if SBC activities are designed to address them.
- **Behavioral outcomes.** Over time, exposure to SBC activities and changes in the intermediate outcomes may lead to a greater percentage of the population practicing the desired malaria-related behaviors.
- **Enabling environment.** An enabling environment is necessary for behavior change to occur. SBC can motivate groups and individuals to advocate for themselves and to do what they can to create the environment that supports the desired behavior. However, policies promoting healthy malaria behaviors, the availability of and access to commodities, and a strong infrastructure for health service delivery remain vital to behavioral uptake. Another powerful set of factors are the social determinants of health. According

Figure 1: Types of indicators for monitoring and evaluation plans



to the World Health Organization (WHO, n.d.), these determinants are "the conditions in which people are born, grow, work, live, and age, and the wider set of forces and systems shaping the conditions of daily life." They include income, education, housing and food security, peace/conflict, inclusivity, and discrimination, among others. Some indicators such as the net use-to-access ratio and the proximity to health facilities are commonly measured in SBC assessments. SBC programs can also disaggregate data by socioeconomic status, age, gender, and other factors and use qualitative and localized data about the context to better understand how to improve equity to services and address barriers to sustaining malaria behaviors among economically or socially disadvantaged groups.

Although health impact is not included in this framework, it is important to recognize that SBC can indirectly contribute to it. SBC programs can help reduce malaria morbidity and mortality through their influence on behaviors and the enabling environment. However, any attribution to SBC's impact on malaria rates needs to account for the availability of quality goods and services as well as the epidemiological and entomological context.

Illustrative indicators for malaria SBC

This section provides illustrative indicators for each type described in Figure 1. Full indicator reference sheets which include definitions, strengths, limitations and interpretations for most of the illustrative indicators are provided in Annex 2 of this guide. Similar details are provided for the remaining indicators in the footnotes and Resources section. Page 19 contains an example of how many of these indicators can be adapted to providers.

PROGRAM OUTPUT INDICATORS

Program output indicators are used for output monitoring. The data sources are indicated in parentheses:

- Number of SBC materials or approaches developed (activity reports).
- Number of SBC activities carried out (activity reports).
- Number of people trained (attendance registers).
- Number of referrals made, by type (referral forms).

REACH AND COVERAGE INDICATORS

Reach indicators are used for process monitoring while coverage is more reflective of outcome monitoring, due to the presence of a denominator (the overall target population). The data sources are indicated in parentheses:

- **Reach**: Number of people/facilities/community groups participating in or reached by SBC activities (activity reports) .
- **Coverage**: Percentage of people who recall hearing or seeing any malaria message in the last six months (surveys, community monitoring/scorecards)forms).

INTERMEDIATE OUTCOMES AT THE INDIVIDUAL AND COMMUNITY LEVEL

The purpose and uses of intermediate outcome indicators include formative research, outcome monitoring, and evaluation. The indicators rely on the following data sources: surveys, community monitoring/scorecards, focus groups, and in-depth interviews.

KNOWLEDGE

- Percentage of people who name mosquitoes as the cause of malaria.
- Percentage of people who know the recommended prevention measures for malaria.
- Percentage of people who know the main symptom of malaria is fever.
- Percentage of people who know the recommended way to diagnose malaria is with a test.
- Proportion of people who know the treatment for malaria.

PERCEPTIONS OF RISK AND EFFICACY

- **Perceived susceptibility**: Percentage of people who perceive they are at risk for malaria.
- **Perceived severity**: Percentage of people who feel that the consequences of malaria are serious.
- **Perceived response efficacy**: Percentage of people who believe that the recommended practice or product will reduce their risk.
- **Perceived self-efficacy**: Percentage of people who are confident in their ability to perform a specific malaria-related behavior.

ATTITUDES

- Percentage of people with a favorable attitude toward the product, practice, or service.

SOCIAL NORMS

- **Descriptive norms:** Percentage of people who believe the majority of their friends and community currently practice the behavior.
- **Injunctive norms:** Percentage of people who believe the majority of their friends and community would approve of the behavior.

INTENTION

- Percentage of people who intend to practice the specific malaria behavior.

COMMUNITY CAPACITY SCORE

- Percentage of people who report higher community capacity scores.

Note: Community capacity scores include multiple domains such as collective efficacy, community participation, leadership, conflict management, and social cohesion (Underwood et al., 2013).

GENDER NORMS

- Percentage of people who hold gender-equitable norms related to malaria
- A variation is called “percentage of people who hold gender-equitable norms related to malaria treatment”[1,2]monitoring/scorecards/forms).

[1] Questions about gender-equitable norms related to malaria can be found in the men’s and women’s questionnaires in the Malaria Behavior Survey. A link to the tools can be found in the Resources section of this guide under “Household surveys and data collection tools.”

[2] The Malaria Matchbox invites users to identify gender equity issues. Often this is through qualitative sources. Whether quantified or left as qualitative indicators, progress on the identified factors can be tracked over time. A link can be found in the Resources section of this guide under “Additional indicators.”

BEHAVIORAL OUTCOMES

The illustrative list below features behavioral indicators that are routinely collected by common data sources. They are used for formative research, outcome monitoring, and evaluation.

Percentage of people (such as clients, community or household members) who practice the recommended malaria behavior:

- Percentage of referrals completed, by type of service.
- Percentage of women who attended at least one, two or three, and four or more antenatal care (ANC) visits during the last pregnancy.
- Percentage of women who attended ANC in the first trimester of their last pregnancy.
- **Insecticide-treated net (ITN) use-to-access ratio:** The ratio of people who used a net among those who had access to one within their household.
- **Net use the previous night:** Percentage of the population who slept under an ITN the previous night.
- **Consistent use:** Percentage of the population who slept under an ITN every night the previous week.
- **Prompt care-seeking:** Percentage of children under five years old with fever in the last two weeks for whom advice or treatment was sought the same or next day following the onset of fever.
- **Appropriate care-seeking:** Percentage of children under five years old with fever in the last two weeks for whom advice or treatment was sought from an appropriate source.
- Percentage of targeted children who received seasonal malaria chemoprevention (SMC), by cycle.
- Percentage of children who were given the full three daily doses at last cycle (or who received all planned cycles).
- Percentage of eligible children who received the malaria vaccine, by dose.

This data can be obtained through household surveys, client exit interviews, referral cards, and post-campaign assessments.

Percentage of providers who practice the recommended malaria behavior.
Since providers are rarely the unit reported in studies, the following indicators are frequently used as proxies for provider behavior:

- Percentage of pregnant women at ANC who received intermittent preventive therapy of malaria in pregnancy (IPTp) according to national guidelines.
- Percentage of fever cases receiving a malaria diagnostic test.
- Percentage of tested cases treated/not treated according to test results.
- Percentage of ANC clients or caregivers who reported respectful treatment or a positive experience from providers.

Data sources on provider behavior indicators include service statistics, such as health management information system (HMIS), administrative data (ITN and SMC campaigns), community health worker (CHW) registers, and health facility registers; Service Provision Assessment (SPA)/ Service Availability and Readiness Assessment (SARA)/ facility surveys, register reviews, client exit interviews, client-provider observations, and so on (the new version of the SPA survey captures more detail on respectful care and client satisfaction, as well as mystery client visits).

A note about additional behaviors:
The list of malaria-related behaviors exemplified by the indicators above is far from comprehensive. Provider and client/household behaviors can be complex and involve multiple steps and sub-behaviors. Many data sources such as the Malaria Behavior Survey (MBS), post-campaign assessments, SPA/SARA/health facility surveys, and supportive supervision also collect data on important sub-behaviors such as net hanging rates, net care, counseling, the proper conduct of tests, among others. SBC programs wishing to capture information about additional behaviors should consider collecting this information when it is feasible and when the behavior is a priority behavioral objective of the SBC program.

ENABLING ENVIRONMENT

The following indicators can be tracked as intermediate outcomes if the SBC program is designed to affect them. These indicators are used for formative research, outcome monitoring, and evaluation, unless otherwise noted.

Factors related to household/client access. Data sources include surveys, community monitoring scorecards, focus groups, and in-depth interviews. For ITN and SMC campaigns, administrative data is also used.

- **Access to ITNs:** Percentage of the population with access to an insecticide-treated net in their household[1].
- **Access to SMC:** Percentage of households with eligible children registered[2].
- **Geographic access to malaria services:**
    - Percentage of households near a health facility or CHW (defined as <5 km, 30 minutes on foot, or 10 minutes by car)[3].
    - **Financial, geographic, or social access:** Proportion of respondents who cited distance/cost/permission/ as reasons for not seeking treatment for sick child/ taking SP/going to ANC[4].
- **Equity (quantitative):** Absolute concentration index[5] indicates the degree to which an indicator (such as malaria service utilization) is concentrated among disadvantaged or advantaged subgroups (one can disaggregate by socioeconomic status, education, gender, age, and other sub-groups).
- **Equity (qualitative):** Malaria Matchbox tool[6].

Factors related to health system capacity. Data sources include SPA/SARA/facility surveys (which include provider interviews, client exit interviews, observations, facility inventories, etc.). Supportive supervision, as well as HMIS, supply chain reports, and requisition forms, may also be used.

Within facilities:

- **Workload:** Ratio of clients to providers in a specific time period.
- **Training:** Percentage of providers who received training on a specific malaria service.
- **Supervision:** Percentage of providers who received supervision on a specific malaria service within a specific period.

Supply chain:

- Number of days the facility had a stock-out of RDTs, SP, artemisinin-based combination therapy (ACT), vaccine, or ITNs within a specific period, or
- Whether the facility had a stock-out of a specific malaria commodity within a specific time period.

Across facilities:

- Percentage of facilities providing malaria services with tracer items on the day of the assessment .
    - Note: tracer items in the SARA do not include ACTs, they do include guidelines, staff, and training; this can be adapted to the context.
- Percentage of facilities providing child health curative care services that have ACT.
- Facility density per 10,000 population.
- **Health workforce density:** Number of core health workers per 10,000 population.

Other (used for outcome monitoring and evaluation). The data sources include community scorecards, outcome mapping, and market valuation of contributions (e.g., rate cards for airtime).

- **Resource mobilization:** Value of financial resources and in-kind contributions raised as a result of SBC activities .
- Quantitative or qualitative description of other enabling environment outcomes (e.g., policy changes, changes in organizational culture or processes, formation of partnerships).

[1] Details on the measurement, considerations, limitations, and interpretation of this indicator can be found in the resources provided for the Malaria Indicator Survey listed in the Resources section under "Household Surveys and Data Collection Tools.

[2] Details on the operational definition, data source, and considerations for this indicator can be found in the Resource section, under "Additional indicators."

[3] The Malaria Behavior Survey and some household surveys measure households' objective distance to facilities using GPS coordinates.

[4] Subjective perceptions of access can also be assessed by asking questions such as "for what reason(s) did you not got to the health facility earlier" (see q. 307 of the MBS women's questionnaire)

[5] Details on the calculation, definition, interpretation, and an example of the ACI can be found in the Health Equity Assessment Toolkit, found in the Resources section under "Additional Indicators."

[6] Module 2 of the Malaria Matchbox toolkit contains guidance on how to collect information on how risk factors, barriers to accessing services, and bottlenecks for service delivery affect health equity in the context of malaria.

How and When to Use The Indicators

Frequently asked questions

This section includes commonly asked questions about how and when to use indicators, how to choose them, and how to adapt them.

Which malaria behaviors or audiences are the indicators suited for?

The indicators can be used for any malaria behavior and target audience. This guide provides examples related to SMC, ITN, case management, ANC, and IPTp with audiences such as providers and community members. Over time, as new technologies may become available and as environmental factors, evidence, and malaria epidemiology evolve within countries, new programs and behaviors may become relevant and target audiences may shift. This guide provides mostly examples for community-level activities/behaviors, but the indicators were designed to be adaptable to any malaria behavior and audience.

What kind of M&E activities are these indicators for?

The indicators can be used for formative research, for monitoring, or for baseline, midline, and endline evaluations.

Formative research is used to inform the design of an SBC program and can also be used to provide baseline data for evaluations. Relevant indicators include those measuring household and provider behaviors as well as those that measure potential influencers of behavior change, including knowledge, perceived risk and severity, self-efficacy, response efficacy, norms, and attitudes. Ideally, these data will be complemented by other data, such as access to services and commodities, demographic information about the target population, media habits, and qualitative data that could provide more in-depth information on why people behave or feel a certain way. Triangulating data on behaviors with data on access and availability of key commodities will help determine whether an SBC activity is likely to have an impact on behavior change or whether efforts to improve other aspects of the service delivery environment—such as commodity management or reporting—need to be part of the broader program as well.

Process monitoring is intended to ensure that the SBC program is being implemented as planned. While important, this information is not enough to ascertain whether the SBC program is having the desired results. Process monitoring includes program output and reach/coverage indicators such as the number of SBC activities carried out, the number of materials or approaches developed, the number of people trained, and the number of people reached.

Outcome monitoring takes process monitoring a step further and includes tracking changes in intermediate and behavioral outcomes such as the target audience's perceptions and behaviors during SBC program implementation. Target audiences can include community members and providers. Many SBC programs also seek to change the enabling environment (i.e., availability, accessibility, cost, user-friendliness, and other aspects of malaria services). These types of intermediate outcomes can be tracked as well (see sample indicators above). When documentation shows that intermediate and behavioral outcomes shift in the desired direction after an SBC program begins, then it is likely that the SBC program contributed to the change. When only changes in behavior are documented and information on changes in intermediate outcomes such as knowledge and perceptions is unavailable, the contribution of SBC is unclear. In these situations, it could be argued that improved access alone may have had a bigger role in the improved performance of a behavior. Outcome monitoring helps document whether the desired changes occurred, builds a case for SBC's contribution, and informs mid-course corrections. Outcome monitoring involves the use of indicators for program outputs, reach/coverage, and intermediate and behavioral outcomes.

Evaluations are intended to determine whether the program achieved its goals and to provide insights for future programs. Evaluations require the selection of a research design and methods to yield evidence for attributing changes in behavior to the SBC program, and they may include the comparison of data for reach or coverage and for intermediate and behavioral outcome indicators. Data on recall may help demonstrate that measured changes in behavioral outcomes can be attributed to SBC activities. Evaluation reports and manuscripts may describe SBC program outputs, but these data are not usually factored in the analyses.

Are the indicators only for household surveys?

The indicators and their questions can be used for many types of data sources, including household surveys. The selection of appropriate data sources is driven by the following:

The type of indicator: Program output indicators rely on data directly generated by the program, such as activity reports, training reports, station broadcast logs, and delivery notes from printers. Indicators that are not generated by the program will necessitate data collected from the target audiences, which may include household surveys, short message service (SMS) or interactive voice response (IVR) surveys, omnibuses, community monitoring, focus groups, and so forth.

Whose behavior is measured: When health provider behavior is the focus, interviews with providers will likely be needed. In general, information about the facility or workplace environment (such as, but not limited to, training, supervision, and the availability of commodities and supplies) and the client encounter should also be collected since they can also be factors influencing provider behavior. If household behaviors such as ANC uptake, care-seeking, or net-use behaviors are of interest, household or community-based data sources are more relevant.

Geographic scope: The Malaria Indicator Survey (MIS) provides a standard, optional SBC module with a subset of the indicators and questions in this guide. The indicators are useful for monitoring trends in perceptions and exposure to SBC messaging over many years. For a national or regional-level SBC activity, adding more questions to a national-level survey such as the Demographic and Health Survey (DHS) or MIS may be ideal if the timing aligns with the baseline or endline. For programs implemented in a smaller geographic area, the DHS or MIS are unlikely to have enough statistical power to provide district-level results. In this case, data collected locally can be used.

Available resources: When resources for stand-alone studies are limited, programs should consider adding SBC questions to other planned surveys such as durability monitoring surveys, post-SMC cycle, or post-ITN campaign surveys, focusing on outcome monitoring approaches such as omnibuses, self-administered interviews for literate providers, or using qualitative approaches such as focus groups.

Availability of complementary data sources: Data triangulation is the process of examining two or more data sources to get a better understanding of a situation. When data about malaria behaviors from data sources such as the HMIS (for service utilization and provider adherence) already exists, SBC programs may wish to focus on using outcome monitoring approaches to track exposure to SBC activities and changes in perceptions.

Please see the Data Sources section for more details.

There seem to be many indicators. How should we choose which ones to use?

Most indicators (and sets of indicators) only show select slices of reality. Usually, several slices are needed to gain a reasonably valid understanding of a situation. Try to include every type of indicator from each section of the framework, particularly the intermediate outcome indicators. Evidence shows that knowledge alone is not enough to change behavior. The more factors (represented by intermediate outcome indicators) in favor of the behavior that are present, the more likely behavior change will follow.

Countries and programs can select indicators based on findings from literature reviews, expert consultations, or formative research. The selection of indicators will also be determined by the types of programs a country is implementing, and whether the data is being collected for formative research; monitoring; baseline, midline, or endline evaluation. Often, however, context-specific data is lacking. Therefore, using all the intermediate outcome indicators is even more important. It has been found that even when the same set of indicators and questions are being used, the factors that influence behavior tend to vary by setting (Babalola et al., 2022; Olapeju et al., 2023). Casting a wider net—one that is guided by behavioral theory, as the above indicators are—allows SBC programs to be informed by quality data and not by assumptions. Given the complexity of human psychology, the indicators presented above represent a broad yet parsimonious set that can help explain behavior and guide SBC programming.

It is possible, however, to reduce the number of questions used to measure each indicator. Some indicators, such as norms and recall, may require only one question. Other indicators related to risk, efficacy, and attitudes may need as few as three questions. Countries and programs can choose questions based on expert review and/or findings from their literature reviews or formative research.

Some of the indicators clearly leave room for adaptation. How do I tailor them to my program?

The following explain how each type of indicator can be adapted. Examples are also provided further below.

Program output indicators: The indicators can be kept as they are, and results should be disaggregated by the specific types of activities the program plans to implement. For example, a program might decide to categorize and measure mass media outputs (such as radio spots or TV episodes) differently than interpersonal communication outputs (number of flipcharts produced, number of small group dialogues conducted, etc.).

Reach/coverage: Survey questions are provided to help programs measure the indicators. Some reach/coverage indicators allow the program to invite respondents to recall the specific messages, slogan, or logo.

Intermediate outcomes: Most of these indicators should be customized to the population of interest (e.g., percentage of caregivers of children under five, percentage of providers, percentage of CHWs). Each behavior should have its own set of intermediate outcome indicators.

- Choose only knowledge indicators related to the behavior(s) of interest. For example, an SBC program intended to increase net use does not need indicators about knowledge of malaria treatment.
- The risk indicators (perceived susceptibility and perceived severity) do not need to be adapted. They can be used for any behavior as is and do not need to be repeated for additional behaviors.
- Indicators for self-efficacy, response efficacy, attitudes, and norms use generic phrasing such as "practice or product." These can simply be reworded as the specific behavior (e.g., "net use" or "malaria test" if that is the desired behavior). Each behavior of interest should have its own set of self-efficacy, response efficacy, attitudes, and norms indicators.

Behavioral outcomes: Select only indicators related to the behavior or behaviors of interest.

Documenting the indicator definitions and methods of measurement used by an SBC program is a good practice, especially if any additions or adaptations were made to the ones provided in this guide. This practice will help ensure that the data is consistently collected and the results are correctly interpreted, particularly for comparisons with other countries, SBC programs, or over time.

How can we develop and adapt indicators for providers?

Few validated measures of provider behaviors and the factors influencing them exist, particularly for malaria, although several efforts are ongoing in this area. The illustrative indicators above, including intermediate outcome indicators, can be used and adapted for providers. Additionally, programs are encouraged to develop their own measurement methods and questions.

When adapting and selecting indicators providers, it is important to use indicators for every component in the framework above, including process, reach, intermediate outcomes, behavioral outcomes, and the enabling environment. This approach facilitates a holistic understanding of the context and a program's effectiveness. A common pitfall is when assessors leave out intermediate outcome indicators. However, intermediate outcomes such as norms among providers (Cotterill et al. 2013), trust in RDTs (Burchett et al., 2017), and confidence in one's ability to practice a behavior, such as estimating gestational age to assess eligibility for IPTp (Malpass et al., 2023) have been frequently implicated in qualitative studies as being important determinants of provider behavior. SBC programs should conduct formative research, look to behavioral theory, and review the literature to identify potential factors to measure. Familiarity with malaria service delivery will improve the chances of developing precise and useful measurement methods and questions.

Careful attention should be paid to avoid conflating indicators, recognizing the distinction, for instance, between a provider's knowledge of national case management guidelines (knowledge) and their belief in the accuracy of malaria tests (response efficacy). Understanding the differences, as guided by behavioral theory, can result in more robust and impactful SBC programming.

For example, these factors, which were derived from the qualitative research and behavioral theory, can be adapted to the intermediate outcome indicators below:

- **Knowledge:** Proportion of providers who can cite eligibility criteria and dosing schedules for IPTp.
- **Knowledge:** Proportion of providers who can cite steps for assessing a pregnant woman's gestational age.
- **Self-efficacy:** Proportion of providers who feel confident in their ability to assess a pregnant woman's gestational age.
- **Social norms:** Percentage of providers who believe the majority of their colleagues currently provide ACTs only to clients with test-confirmed malaria.
- **Response efficacy:** Percentage of providers who believe that RDTs with negative test results are accurate.

Note that these types of factors are also described in the list of indicators provided above, though the wording was adapted to providers and the specific steps in malaria service provision (rather than a broad behavior, such as "adherence to guidelines").[2]

Should we use the same indicators year after year?

Using the same SBC indicators over time may help countries and SBC programs identify areas where sustained efforts are needed and identify trends over time. For example, knowledge levels about prompt and appropriate care-seeking may increase quickly, but the percentage of the population with favorable attitudes toward the behavior may stagnate, pointing to a potential direction for future efforts. In addition, it may be important to understand how perceptions change as malaria contexts change. For example, monitoring perceptions of risk and how this may impact behaviors like ITN use or case management may be useful to track as transmission declines. Similarly, monitoring perceptions of SP or ACT effectiveness among providers and/or clients may be useful as drug-resistant strains emerge. Finally, as mentioned earlier, new indicators may be needed to reflect new malaria programs or new behaviors, and the indicators in the guide may be adapted to those.

Example of selecting and adapting malaria SBC indicators

This section provides an example of how an SBC program might select and adapt recommended indicators from this guide. Indicators were chosen on the following basis:

- **Relevance:** The indicators aligned with the objectives and activities of the SBC program, as articulated in their theory of change and the SBC program strategy. The behavioral outcome indicator (ITN use-to-access) was preferred over other net use indicators because it serves as a more accurate measure of the specific area in which SBC programs might exert the most influence.
- **Feasibility:** The SBC program could access data sources to measure indicators related to reach/coverage (omnibus) and behavior (MIS).
- **The SBC program's alignment with existing household surveys:** In this case, the MIS was statistically powered to have generalizable results at the regional level, and the SBC program covered the entire region.
- **Completeness:** All the priority indicators were used to show the connection between SBC program efforts and outcomes.

Note that the indicators recommended in this guide could be used for both communication and non-communication activities. In this case, the SBC program uses community engagement, mass media, and targeted incentives to increase net use rates.

Credit: USAID

Mother and child under a mosquito net in Kenya.

[2] The next step is to develop questions related to these indicators. Developing new questionnaire items is painstaking work and a poorly constructed questionnaire can hinder meaningful interpretation. For a step-by-step review of best practices in questionnaire development for social and behavioral research, please see Boateng et al. (2018). In brief, a strong understanding of each theoretical aspect to be measured is helpful, as are stakeholder and provider consultations, collection of data, and capacity to conduct statistical tests for reliability and validity.

The example provided here encompasses indicators for an SBC program designed to increase net use.

Indicators listed in the RBM SBC Indicator Reference Guide	Indicators used by the SBC program	Rationale for selection and/or adaptation
Program output		
• Number of materials produced, by type. • Number of SBC activities carried out, by type. • Number of people trained in SBC for malaria . • Number of referrals made, by type of service.	• Number of materials produced, by type . • Number of SBC activities carried out, by type. • Number of people trained in SBC for net use.	• The SBC program revised generic language to make it specific to nets. • The SBC program did not choose the referral indicator because they did not implement referrals. • The SBC program chose the other three indicators because they provided feasible ways to report on their efforts. They planned to use activity and training reports to produce this data.
Reach and coverage		
• Number of people/ facilities/ community groups participating in or reached by SBC activities, by type of participant and activity. • Percentage of people who recall hearing or seeing any malaria message in the last six months. • Percentage of referrals completed, by type of service.	• Number of people/ facilities/ community groups participating in or reached by SBC activities, by type of participant and activity. • Percentage of people who recall hearing or seeing any messages about net use in the last six months.	• The SBC program revised generic language to make it specific to nets. • The SBC program did not choose the referral indicator because they did not implement referrals. • The first indicator was feasible and appropriate, because they could count the number of individuals, facilities, and community groups they had purposely engaged with and who participated in the community engagement and the targeted incentive program using activity reports. • The second indicator was feasible because an omnibus survey was available in their coverage areas. Moreover, they thought it would be useful to track how many of their target audience they were reaching so they could identify which areas needed more SBC activity. This would enable the program to strategically allocate resources and focus programs where they were most needed.

Indicators listed in the RBM SBC Indicator Reference Guide	Indicators used by the SBC program	Rationale for selection and/or adaptation
Intermediate outcomes: The SBC program chose multiple intermediate outcome indicators beyond knowledge to align with the program theory of change. They intended to use an omnibus survey to track these outcomes.		
Knowledge related to prevention: Proportion of people who name only mosquitoes as the cause of malaria.	Proportion of people who name only mosquitoes as the cause of malaria .	Previous studies in the country have shown that awareness of nets as a method of malaria prevention is universal (97%). However, while almost all people correctly believe that mosquitoes cause malaria, many believe that green mangoes and dirty environments also cause malaria. When people hold inaccurate beliefs about the causes of malaria, they may be less likely to consistently practice net use. The SBC program worked to correct these misconceptions and wished to measure whether the desired reduction was taking place. The SBC program did not choose any indicators related to case management since their mandate only covered ITNs.
Perceived susceptibility: Percentage of people who perceive they are at risk for malaria. **Perceived severity:** Percentage of people who feel that the consequences of malaria are serious.	**Perceived susceptibility:** Percentage of people who perceive they are at risk for malaria. **Perceived severity:** Percentage of people who feel that the consequences of malaria are serious.	As advised in the Indicator Reference Guide, the SBC program kept the two indicators as is (did not change them) because they are aligned with the program's theory of change. According to multiple behavioral theories like the health belief model (and others listed in the Indicator Reference Guide) individuals are more likely to take preventive actions if they believe they are susceptible to a health threat (perceived susceptibility) and if they perceive the consequences of the threat to be severe (perceived severity).
Perceived response efficacy: Percentage of people who believe that the recommended practice or product will reduce their risk. **Perceived self-efficacy:** Percentage of people who are confident in their ability to perform a specific malaria-related behavior.	**Perceived response efficacy:** Percentage of people who believe that net use will reduce their risk. **Perceived self-efficacy:** Percentage of people who are confident in their ability to use a net every night.	Both indicators were retained because they are aligned with the SBC program's theory of change, which recognizes the importance of individuals' beliefs in the effectiveness of programs and their confidence in performing each behavior of interest. The SBC program revised generic language to make it specific to nets.
Descriptive norms: Percentage of people who believe the majority of their friends and community currently practice the behavior. **Injunctive norms:** Percentage of people who believe the majority of their friends and community would approve of the behavior.	**Descriptive norms:** Percentage of people who believe the majority of their friends and community currently use nets every night. **Injunctive norms:** Percentage of people who believe the majority of their friends and community would approve of net use.	Both indicators were retained because they are aligned with the SBC program's theory of change, which posits that influencing perceptions of what is commonly practiced (descriptive norms) and fostering approval from social networks (injunctive norms) are key to boosting net use rates. The SBC program revised generic language to make it specific to nets.

Indicators listed in the RBM SBC Indicator Reference Guide	Indicators used by the SBC program	Rationale for selection and/or adaptation
Attitudes: Percentage of people with a favorable attitude toward the product, practice, or service.	Percentage of people with a favorable attitude toward net use.	The indicator was retained because it is aligned with the SBC program's theory of change which states that fostering a favorable attitude toward net use is a crucial determinant of behavior change. The SBC program revised generic language to make it specific to nets.
Behavioral outcomes		
Proportion of people who practice the recommended behavior (for nets, the ITN use-to-access ratio is recommended).	ITN use-to-access ratio.	Net use may increase simply when people have more nets, even without SBC. The ITN use-to-access ratio helps SBC programs measure the subset of respondents who did not use a net even when they might have had the opportunity to use one. Thus the ITN use-to-access ratio serves as a more accurate measure of the specific area where SBC programs might exert the most influence. The indicator "% of people who use a net the night before," is more suitable for national malaria control strategies because it is a simple measure of overall net use in the population which is the ultimate goal of the National Malaria Program. Complementary metrics related to net use and ownership or access are needed to identify how to boost results in this indicator. The SBC program did not plan to implement a stand-alone survey but wished to leverage the MIS to measure the ITN use-to-access ratio. This MIS was statistically powered to have results that were generalizable at the regional level and was appropriate for this SBC program whose activities covered the entire region. This would not have been the case for SBC programs that only cover select districts. In those situations, a household, community, or client-focused survey in the covered areas might be ideal. While the MIS SBCC module can provide data for most of the intermediate outcome indicators, it does not include indicators for injunctive norms, and it takes place too infrequently to allow this SBC program to adjust its activities.

Data Sources

This section provides detail on data sources that could be used to develop, adapt, and report on malaria SBC programs.

Note: Links to named sources and data collection tools are included in the Resources section at the end of this guide.

The data sources described are related to communities/households, providers, and SBC programs. Although this list is extensive, SBC and malaria are dynamic fields, with new sources emerging often. The set of data sources used by a program should be selected based on their ability to contribute information on all the types of SBC indicators discussed above (program outputs, reach and coverage, intermediate outcomes, and behavioral outcomes) as well as feasibility. While most SBC programs will continue to collect new data through monitoring and/or research activities, many will find it useful and cost-effective to leverage existing data sources.

Many places now harbor a wealth of data about malaria services, commodities, target audience perceptions, and other aspects of the programmatic, epidemiological, and entomological context. **Data triangulation** is the process of examining two or more data sources to get a better understanding of a situation. In the formative research stage, data triangulation can lead to richer insights into human behavior and the context that influences it. During monitoring, data triangulation can help program managers interpret the trends observed and mitigate potential risks. Finally, during the evaluation stage, comparing trends observed in program data with those from other data sources can help program managers and evaluators validate their findings.

For example, data from household surveys, health facility surveys, and durability monitoring studies can be triangulated with qualitative data from focus groups, key informant interviews, technical expert consultations, and content analyses of social media (social listening) to obtain deeper insights into the reasons behind reported perceptions and behaviors and inform the development of SBC programs. Another example of triangulation is the use of HMIS data to monitor service utilization, the quality of service delivery, and commodity availability, as well as using SBC program data to track SBC activities, audience reach, and referrals. SBC programs can use this information to track their impact on service uptake and identify facility-related factors that threaten the program's effectiveness.

Each instance of data collection and use, and instances of data triangulation, in particular, has the potential for collaboration with other malaria and health system stakeholders. Existing data and reports can be used as is, secondary analyses can be run, and where prudent, select questions can be added to planned assessment and routine data collection activities to fill gaps in SBC programs' understanding of household and provider behavior. Finally, joint program planning, data-sharing, and data review can improve alignment and complementarity between malaria control efforts and SBC programs.

Credit: President's Malaria Initiative

SBC for ITN use in Madagascar."

Data sources related to household and community audiences

The following data sources provide insights on household and community audiences. Quantitative and qualitative data are complementary, and when possible, both types of data should be collected.

Quantitative data encompasses numeric measurements of behaviors, knowledge, perceptions, and norms in a given population.

- Routine household surveys include the MIS, DHS, Multiple Indicator Cluster Survey (MICS), and MBS.
- Knowledge, attitude, and practice (KAP) surveys are tailored for specific populations (e.g., mobile groups, opinion leaders) and specific research questions.
- Omnibus surveys are frequently offered by market research firms and occur on an ongoing schedule (e.g., quarterly). Multiple clients, including non-profit and for-profit entities, share the cost of the survey and can contribute a limited number of questions.
- Intercept surveys are short, structured questionnaires designed to capture information and feedback quickly and immediately from target audience members during key interactions or events. They can be self-administered (e.g., a respondent fills out a mobile, web, or paper form), or they can be administered by an interviewer.
- Phone surveys are short questionnaires typically administered by text or prerecorded voice messages, but they can also be administered by an interviewer.

Uses: All five can be used for formative research, outcome monitoring, and evaluation. Intercept surveys are also used for pretesting and are an under-utilized method for collecting intermediate and behavioral outcome data.

Qualitative data provides rich details on the opinions, experiences, and practices of a population that are obtained through

- Semi-structured interviews with representatives of target audiences and stakeholders.
- Focus group discussions with target audiences and stakeholders.
- Observations of target audiences' interactions with malaria services or products.
- Content analysis of web, radio, TV, social, or print media content and/or audience engagement.
- Community listening involves gathering information from trusted community members like local leaders or community health workers to collect their observations or feedback.

Uses: All four can be used for formative research, pretesting, outcome monitoring, and evaluation. Approaches such as **community-led monitoring** and **outcome mapping** with stakeholder groups are similar to focus groups that can be used to monitor outcomes prospectively. Semi-structured interviews, focus groups, and observations are also used for pretesting.

Quantitative data

Routine household surveys

The MIS, DHS, MICS, and MBS include questions that measure behaviors—net use, ANC attendance, IPTp, care-seeking, testing, and treatment with ACTs. These results should be used for formative research or baseline evaluations whenever they are available. Household surveys are limited in their ability to measure indicators on health service provision (e.g., health service provider knowledge, attitudes, and adherence to guidelines) and to assess the behaviors and behavioral factors among audiences of special interest, such as mobile or migrant populations. Cross-sectional household surveys, in particular, are not designed to establish causal relationships, only potential associations. Even when changes over time are observed, robust statistical methods should be used to identify factors associated with these changes.

Malaria Indicators Surveys

Advantages: The MIS is conducted every three to five years, and as such, national malaria programs expect to be able to rely on the continuity of MIS as a data source. It also provides historical data for observing trends. Since 2019, the MIS has included an optional SBCC module that is only administered to women. The 14 questions in the module measure exposure to SBC and psychosocial factors such as knowledge, perceptions of risk and efficacy, norms, and attitudes. The results tables of the module can offer valuable direction for focusing SBC efforts, such as which populations need to be targeted for SBC activities, and how to frame SBC messages and select different channels. If conducted within six months of an SBC campaign, results from the MIS SBC module can also be used to explore the general population's recall of relevant SBC messages and,

when combined with a secondary analysis, to measure the campaign's influence on malaria knowledge, attitudes, and practices. The SBC module data from multiple rounds of the MIS could be used to understand national-level trends in malaria-related perceptions over time.

Limitations: Due to the limited number of questions, the module alone will rarely be sufficient for developing an SBC program from scratch. Caution is also warranted in interpreting results. For example, due to resource limitations or low media penetration, many SBC activities are only implemented in specific communities or districts, while the MIS is often designed to produce precise program coverage results only at national or regional levels. While positive trends at national or regional levels can suggest that SBC efforts at the district and subdistrict levels are making a difference, any improvements observed will, at best, appear to be incremental. Targeted evaluations carried out in actual program areas will give a more precise picture of whether any changes occurred and how much impact was achieved, as well as insights on which specific approaches worked better than others. However, conducting targeted evaluations will require additional resources and may not be feasible for many programs.

Demographic and Health Surveys

Advantages: The DHS is also conducted every three to five years, and as such, national malaria programs expect to be able to rely on the continuity of this survey as a data source. It also provides historical data for observing trends. The DHS covers multiple health areas and include interviews with men and women. The DHS already has two standard questions designed to measure exposure to an SBCC program.

Limitations: Although some countries may wish to use the SBCC module in the DHS to capture men's perceptions, the costs may make it difficult (the DHS is longer than the MIS). Moreover, the MIS contains a wealth of other indicators related to malaria programs that provide useful context for the data collected by the SBCC module. While routinely including the SBCC module in the MIS is recommended, the decision as to whether to add it to the DHS will depend on the scope, length, and costs of the planned surveys on a case-by-case basis and through discussions with the Ministry of Health, DHS Program, and other stakeholders.

Multiple Indicator Cluster Surveys

Advantages: The MICS is a household survey designed and implemented by UNICEF. The most recent MICS include 130 indicators that assess the health of children, women, and men in the areas of health, education, and child protection. All MICS are based on representative samples, selected using probabilistic, random samples. While most MICS do not collect biomarkers such as malaria parasitemia, some do at governments' request. MICS conducted in malaria endemic countries include three malaria modules: ITNs in the household questionnaire, IPTp in the questionnaire for women, and care-seeking and treatment in the questionnaire for children under five. In addition to malaria-specific questions, MICS contain questions about ANC in the women's questionnaire.

Limitations: While many MICS are nationally representative, some only cover specific population groups in a country or only certain geographical areas. MICS are often repeated but not with the same frequency as MIS or DHS in most countries.

Malaria Behavior Survey

Advantages: The MBS is a cross-sectional survey with structured questionnaires administered to a random sample of women and men of reproductive age and heads of households. Similar to the MIS, the MBS is fielded in the rainy season or shortly afterward. It is effectively a KAP survey; it provides rich information on multiple determinants of behavior, including all those listed in this guide in addition to others, such as perceptions of health workers. The questions in both the MIS and the MBS are theory-informed and based on survey data from multiple countries. In contrast, many KAP surveys are not standardized and may rely on unvalidated survey questions and tools, which challenge data interpretation and use. While the MBS complements the MIS and also collects data on malaria outcome behaviors, the primary purpose and added value of the MBS is an understanding of the psychosocial factors associated with the outcome behaviors being measured.

A key benefit of the MBS is the use of logistic regressions—analyses that measure the strength of an association between determinants and behaviors, while controlling for confounders such as socioeconomic status. This level of rigor in data analysis allows program planners to confidently identify which determinants an SBC program should try to influence.

Limitations: To manage costs, the MBS is powered to report only at the zonal level or national level, which means that province- or district-level differences are not presented. Like the other household surveys, this questionnaire is lengthy. Recommendations state it should be fielded about every five years, which may or may not suit the timing of SBC programs.

Knowledge, attitude, and practice surveys

Advantages: A community-based or household KAP survey offers great flexibility and control over what questions are asked and to whom they are directed. For example, KAP surveys allow programs to interview caregivers, pregnant women (and their partners and mothers-in-law), youth, minority groups, or a more general population in a given region. KAP surveys are typically designed to measure specific behaviors and behavioral factors for formative research or as part of a project evaluation. In fact, data collected from a KAP survey implemented as formative research may also be used for baseline data collection. When implemented in a standardized manner over two or more timepoints, KAP data can be used for outcome monitoring. KAP surveys can include questions for all SBC indicators and more. Questions should cover recall and uptake of behaviors, and for each behavior of interest, questions for intermediate outcome indicators should be included.

Limitations: Because the topic and target audiences for KAP surveys can vary greatly, each KAP survey requires someone with expertise in sampling, questionnaire development, implementation, and analysis. Programs must anticipate these needs and ensure availability of relevant human resource capacity. In addition, implementing a separate household survey, such as a KAP, has cost implications.

Omnibus surveys

Advantages: Omnibus surveys are regularly occurring large surveys conducted by marketing firms. Firms charge for each question added to the survey. Omnibus surveys are often used for audience monitoring to track exposure to key messages and attitudes over time. As they occur frequently (quarterly or semiannually), questions are inexpensive, and national- or regional-level samples can be obtained, these surveys are a cost-effective means of intermediate outcome monitoring.

Limitations: Omnibus surveys are often biased toward urban areas, and their sampling methods are not as robust as household surveys. The level of oversight and control SBC programs may have over data collection is also limited since the work is outsourced to market research firms that need to juggle the interests of multiple clients who contribute questions to omnibuses.

Intercept surveys

Advantages: Intercept surveys are short, structured questionnaires designed to capture information and feedback quickly and immediately from target audience members during key interactions or events. They can be self-administered (e.g., a respondent fills out a mobile, web, or paper form, or calls a number for an SMS or IVR survey), or they can be administered by an interviewer.

Intercept surveys can provide real-time or near real-time information. For example, immediately after providing a service, a CHW may ask a client to call a number to complete a survey. The survey may include questions about perceptions of malaria risk, as well as questions about the client's experience with CHW services.

Self-administered intercept surveys can be an option for literate audiences. During recurrent (e.g., monthly, quarterly, or semi-annual) activities, health facility staff, policymakers, staff from collaborating agencies, or journalists, for example, can be invited to fill out anonymous online forms to capture changes in intermediate outcomes over time. Paper versions can be made available if the internet connection is unreliable. Another variation involves an interviewer reading the questions aloud to a group of respondents who fill out their own forms individually online or on paper. This format reduces the risk of questions being misunderstood, while allowing interviewers to collect data from multiple people at the same time.

Limitations: One significant limitation is the potential for sampling bias, as only individuals present at the survey location are included, which may not represent the broader population. Social desirability bias is also possible, whereby proximity to staff representing the SBC program can lead respondents to provide answers that they perceive as "good" or desired at the expense of honesty. Finally, rates of intermediate or behavioral outcomes observed right after an SBC activity may be higher than those seen several days, weeks, or months after exposure.

Phone surveys

Advantages: Phone surveys can allow for efficient data collection, because they can dial thousands of numbers at the same time, an advantage over in-person data collection. IVR questions use pre-recorded audio tracks instead of SMS or text-based questions, which is useful for populations with low literacy rates.

Limitations: Compared with household surveys, phone surveys are limited in the number of questions that can be asked. Response rates may be lower than those in other survey methods, and respondents may be more likely to hang up or refuse to participate. The quality of responses may also be affected because an interviewer was not available to explain questions the respondent did not understand. Similar to call records or SMS analytics (below), respondents of phone surveys may not be representative of the target population, as usage depends on phone and network access. In many countries where malaria SBC programs are implemented, this may mean that female caregivers of children under five, older individuals, rural individuals, and pregnant women are under-represented.

Qualitative data

While the indicators presented in this guide are measured through quantitative data, qualitative data—obtained from key informant interviews, focus groups, case studies, and observations—also play an important role. Qualitative data describes the context (who, what, where, and how), allows for an in-depth exploration of ideas and indicators, helps explain quantitative results, and informs future research. However, qualitative data and findings may not always be generalizable to the population. Moreover, the quality of the research depends heavily on the skills of the researchers, so careful selection and training of data collectors, facilitators, and data analysts are vital.

The indicators in this guide can be adapted as themes for qualitative questioning and analysis. Questions should be open-ended and worded carefully so they do not lead respondents to believe a specific answer is expected. During analysis, results can be organized by themes based on the indicators. And finally, during reporting, results can be presented following the progression of results in the framework (outputs, intermediate outcomes, behavior, and enabling environment; Figure 1).

Semi-structured interviews

Advantages: Semi-structured interviews with representatives of target audiences and stakeholders allow for in-depth exploration of individuals' perspectives, experiences, and behaviors related to malaria prevention and treatment. Interviewers can probe for detailed information, gaining insights into the nuances of beliefs, attitudes, and practices within the target population. Additionally, these interviews provide opportunities for rapport-building, enabling participants to feel comfortable sharing their thoughts and experiences openly.

Limitations: One limitation of semi-structured interviews is the potential for interviewer bias, whereby the interviewer's personal beliefs or preconceptions may influence the direction of the conversation or interpretation of responses. Additionally, conducting interviews can be time-consuming and resource-intensive, especially when the aim is to have a representative sample from diverse backgrounds. Finally, interpreting and analyzing the qualitative data from interviews can be subjective, requiring careful consideration of the context and perspectives of both the interviewer and the interviewee.

Focus group discussions

Advantages: Focus group discussions with target audiences and stakeholders are helpful for exploring diverse perspectives. They allow for interaction among participants, fostering discussion and debate that can uncover shared norms, attitudes, and cultural influences. Moreover, focus groups can reveal collective experiences and social dynamics that may not emerge in individual interviews.

Limitations: One limitation of focus group discussions is the potential for groupthink or dominant personalities to influence the conversation, leading to biased or limited viewpoints. Some individuals may feel uncomfortable expressing dissenting views in a group setting. Finally, analyzing the data from focus groups requires careful attention to the dynamics of group interaction.

Observations

Advantages: Observational methods provide direct insight into how target audiences engage with malaria services or products in real-world settings. By observing behaviors, interactions, and environmental contexts, researchers can uncover patterns, barriers, and facilitators to malaria prevention and treatment. Examples of the use of observations for malaria SBC include understanding people's net use patterns throughout the night, client-provider interactions, and malaria service delivery.

Limitation: One limitation of observational data is the potential for observer bias, whereby the researcher's interpretations may be influenced by their own assumptions, background, and perspective. The Hawthorne effect, which occurs when people change their behavior when they know it is being observed, may also come into play. Additionally, observational studies may not capture the full range of factors influencing behavior, as they focus primarily on what is observable rather than the underlying motivations or beliefs. Observations also require careful planning to ensure accurate data collection. Tools may need to be developed and tested iteratively as researchers gain a better understanding of the context and behaviors being observed.

Content analysis

Advantages: Content analysis of media content and audience engagement (also known as social listening) involves systematically analyzing textual, visual, or audio content across various communication channels to understand public perceptions, attitudes, and behaviors related to malaria. Social listening is a variation that specifically focuses on analyzing social media. This method provides a structured approach to examining media content and audience interactions, allowing for the identification of prevalent themes, trends, and narratives across media sources, often as events unfold. As with the other qualitative methods above, it can be useful for identifying gaps or misconceptions in public understanding and is sometimes used for monitoring rumors. Third-party services are often available to provide this data in quantitative form as well; they can set up real-time alerts for key words or combinations of words to monitor reach and user reactions (outcome monitoring).

Limitations: This method depends on the depth of detail provided by content providers or audiences in order to understand the nuances and context surrounding the identified themes. The specific medium may not be the most representative source of information, as only a subset of the target audience may use it and only a smaller subset of those may engage with content in any depth. Last but not least, content analysis may not capture audience reactions or engagement beyond the content itself, limiting insights into audience perceptions and behaviors.

Community Listening

Advantages: Community listening involves gathering insights directly from community members through in-person interactions (by conducting meetings or focus groups with representative samples of the community) or trusted key informants, such as local leaders and community health workers. It has been used to monitor rumors during ITN distribution campaigns. Key informants can be asked to report rumors via WhatsApp, SMS, or to an online form. Alternatively, they can report them to a designated person who can log the rumor and connect them to a resource with accurate information. Community listening can be rapid and is less resource-intensive than conventional research studies. It promotes collaboration and shared responsibility in tackling public health challenges and strengthens the capacity of community stakeholders to counter misinformation.

Limitation: Community listening can be prone to biases, as informants may selectively report rumors based on their own perceptions or relationships within the community. To reduce

bias, it is generally recommended to combine on-the-ground sources (community listening) with monitoring online or social media sources (social listening), as well as to consult multiple key informants from that locale.

Community-led monitoring

Advantages: Community-led monitoring refers to approaches where service users or affected communities design and carry out routine data collection and analysis. This approach often informs advocacy efforts, promotes peer-to-peer discussions about health issues, and foster community ownership in developing, implementing, and monitoring solutions. A common variation of community-led monitoring is "community-based monitoring," where community health workers, providers, and other representatives close to the community collect data and share the findings with the community. Tools like community scorecards are frequently used to facilitate this process and provide actionable insights.

Limitations: Community groups may have their own objectives that may not perfectly align with the SBC program and compromises may be needed. Finally, the motivation and ability to carry out action plans will vary by community group; careful screening and training will be important, as will gradually phasing in increasingly complex action plans. Community-based monitoring has a risk of bias if community members feel pressured to report favorable outcomes or if local power imbalances influence reporting. It can also be resource-intensive, requiring ongoing investments in training, tools, and supervision which can hamper sustainability.

Credit: Samy Rakotoniaina/MSH

A community health worker uses his smartphone with the CommCare app during a malaria case management in Vatomandry, Madagascar (2017). Adding behavioral or intermediate outcome monitoring questions to digital CHW tools like this can streamline the collection and analysis of data from brief intercept surveys.

Data sources related to health service provision

While household surveys can capture fever care-seeking and ANC attendance, there are important limitations to what these surveys can tell us. More specifically, they reveal nothing about health provider knowledge, beliefs, and attitudes related to service provision, and they indicate little about the patient-provider interaction. Below are primary sources of data related to health service provision. Because service provision, including provider behavior, is affected by factors at multiple levels—client, provider, workplace/facility, and health system—collecting or triangulating data from multiple sources is a good practice.

Facility data to understand the quality of service provision and the service environment:

- HMIS data, such as monthly reports of services provided and clients seen.
- Review of facility documents and registers, such as outpatient, ANC, immunization, ITN, and lab registers; supply chain reporting and requisition forms; inventory control cards, CHW registers; and client cards/charts.
- Inventory of facility equipment, staff, and supplies.

Uses: Formative research, outcome monitoring, and evaluation.

Client data to understand client behavior, determinants of client behavior, and clients' perceptions of services:

- Household surveys and KAP surveys—See Data sources related to household and community audiences – quantitative data, above.
- Referral forms can be used to monitor how many people were referred for services, and how many of them sought the service.
- Mystery client visits involve trained data collectors pretending to be clients as a means of assessing service quality.
- Observations of provider-client interactions or the service delivery environment provide structured documentation of what was seen and heard .
- Client exit interviews allow gathering feedback from clients upon service completion or departure.
- Client feedback forms or discussions enable collecting client opinions, suggestions, or complaints for service improvement.

Uses: All these methods can be used for formative research, outcome monitoring, and evaluation. The last three are frequently used when pretesting SBC materials and approaches.

Health provider data: to understand providers' behavior, perceptions, and characteristics.

- Surveys allow collecting data on providers' characteristics, perceptions, and self-reported behavior.
- Semi-structured interviews provide rich details on the opinions, experiences, and practices of individuals.
- Focus group discussions are conversations in small group settings to identify commonalities and ranges in perspectives
- Observations on provider-client interactions or other provider activities (e.g., report completion)—See **Data sources related to household and community audiences – qualitative data,** above.
- Facility registers and HMIS reports document provider behavior, albeit at the facility and not at the individual provider level.

Uses: All these methods can be used for formative research, outcome monitoring, and evaluation. The last three are frequently used when pretesting SBC materials and approaches.

Data collection approaches such as **health facility surveys**, **supportive supervision** and **audit-and-feedback** use a combination of these sources (often facility inventories, register reviews, observations, provider interviews, and client exit interviews) to do so. Many countries have their own versions of health facility surveys; standardized ones such as the SPA and SARA also exist.

Facility surveys and supportive supervision tend to focus on collecting data on services provided; the quality of service provision; the availability of staff, commodities, and equipment; and the trainings and supervision received. They rarely explore providers' knowledge, perceptions, and social workplace dynamics, which may affect service delivery. However, questions related to these topics can be added to provider interview questionnaires, as described in more detail below. The Examining Malaria Service Delivery Assessment Tool combines provider interviews, register/facility document reviews, and facility observations to capture a holistic understanding of service delivery at the provider and facility levels. This qualitative approach can be used to complement facility surveys and supportive supervision, which tend to use quantitative measures.

Quality improvement meetings and other group discussions among providers can be used like focus groups to understand facility processes, norms, and the collective experience of providers. These approaches can also be considered a mixed-method approach since they frequently include a review of facility data to track trends in service quality. Supportive supervision data can provide detailed information on specific service delivery steps that are not captured in HMIS, and digitized tools can make the data rapidly actionable. However, quality improvement and supportive supervision are done in a limited number of facilities, are conducted infrequently, and target low-performing facilities. For this reason, data from supportive supervision and quality improvement programs may not be representative of all facilities; however, it is useful when the facility is participating in an SBC or provider behavior change program. Last but not least, supervision and quality improvement activities are frequently conducted by supervisors and not by an independent party; supervisors may be inclined to demonstrate improvements in facility performance, and providers may modify their actions due to the presence of a supervisor. Further, providers may hesitate to report deficiencies or challenges if they fear negative consequences or if the supervisor-provider relationship is not open and trusting. To minimize these risks, programs should ensure that supervision and quality improvement activities are conducted in a supportive and nonpunitive manner, with an emphasis on collaboration, learning, and continuous improvement.

Audit-and-feedback approaches combine many of the above elements. They are a source of data as well as a type of intervention to improve service delivery. Data from facility registers, observations, and client and provider interviews are collected, then compared to established benchmarks or best practices. Audit-and-feedback approaches are commonly used in health programs to identify gaps, reinforce good practices, and motivate providers or community members to take corrective action. Feedback is typically presented in formats such as reports, scorecards, or dashboards and may be shared during meetings, training sessions, or one-on-one reviews. Supportive supervision and quality improvement meetings are types of audit-and-feedback approaches.

Facility data

Health Management Information System

Advantages: Health facilities routinely collect HMIS data for reporting services provided, disease burden, and commodity availability. Many countries have existing systems for collecting HMIS and logistics management information system (LMIS) data, which makes obtaining such data less costly. The data can be helpful for tracking service use, such as IPTp, testing, treatment, and the provision of vaccines and ITNs at the facility or community level. Some countries have indicators for the number or percentage of patients provided with family planning or HIV counseling or the number of health education sessions on a given topic; similar indicators can be adopted for malaria. These indicators from HMIS can be used as proxies for provider behavior and client service utilization.

Limitations: HMIS datasets may be incomplete or incorrect. Challenges may also be present for attributing improvements in service provision to SBC programs. For example, many clients may come from surrounding communities and not just those served by an SBC program. In addition, changes in malaria cases may be due to many things such as seasonality and the presence of other malaria programs. Lastly, HMIS data typically does not contain information on intermediate outcomes such as changes in perceptions.

Review of facility documents and registers

Advantages: Primary facility data forms or registers—such as outpatient, ANC, immunization, ITN, and lab registers; supply chain reporting and requisition forms; inventory control cards; CHW registers; and client cards/charts—are supposed to be the source data for HMIS monthly summary reports. In places where HMIS reporting is poor, using this source data can lead to more accurate estimates of service provision, which frequently serve as measures for provider behavior and client service uptake. Comparing data from multiple sources within a facility can lead to a stronger understanding of facility procedures and practices, including those normally reported in the HMIS and others, such as reporting, supply chain management, and so on.

Limitations: Reviewing primary facility data forms or registers is time-consuming, mainly because they are mostly on paper. In addition, they may be incomplete or inconsistently completed. What is reported in one place may not align with what is reported in another, leading to more questions and discussions with facility staff.

Inventory of facility equipment, staff, and supplies

Advantages: Inventories of facility equipment, staff, and supplies provide valuable information on resource availability within facilities. Health facility surveys, including the SPA and SARA, use inventories to identify gaps in essential medications, equipment, consumable supplies, staff, and clinical support tools such as guidelines or job aids.

Limitations: This information tends to be cross-sectional and is not helpful for understanding the causes of stock-outs; it merely indicates that stock-outs exist.

Client data

Household surveys and KAP surveys

Please refer to the section **Data sources related to household and community audiences** for descriptions of household surveys and KAP surveys.

Referral forms

Advantages: Referral forms help monitor the effectiveness of referral systems by tracking how many people were referred for services and how many of them sought the service. The forms can be used to obtain valuable data on which sources of referrals are effective. Documented completion of a referral from an SBC program is a powerful way to demonstrate that the program may have contributed to service utilization.

Limitations: Referral forms may suffer from incomplete or inaccurate documentation, since not all referrals or follow-up actions may be recorded. Additionally, they may not capture the reasons why individuals did not seek the referred services, limiting the ability to address barriers to access effectively. However, community-based personnel can use referral data to monitor referred clients, provide additional support to those who were not able to obtain the service, and collect data on reasons for noncompletion.

Mystery client visits

Advantages: Mystery client visits involve trained data collectors pretending to be clients as a way to assess service quality. Mystery client visits provide firsthand insights into service quality by simulating real client experiences. Trained data collectors act as clients to assess various aspects of service provision, including staff behavior, facility cleanliness, and adherence to clinical guidelines. This method helps identify gaps in service delivery and areas for improvement.

Limitations: Mystery clients representing real clients and caregivers of children under five may have challenges describing or emulating symptoms. Significant training is needed. For this reason, mystery client visits may be more appropriate for routine preventive services such as IPTp or malaria vaccine provision and less appropriate for malaria treatment. This method may not capture the full range of factors contributing to service quality, including resource availability or provider perceptions.

Observations of client-provider interactions

Advantages: Observations of provider-client interactions involve structured documentation by a third party (observer) of what was seen and heard during clinical encounters. This method provides objective data on communication patterns, clinical practices, and patient-centered care.

Limitations: Observational data may be influenced by the presence of observers, potentially altering provider behavior or patient responses. In addition, this method may not capture subjective aspects of care, such as patient or provider perceptions or emotions.

Client exit interviews

Advantages: Client exit interviews gather feedback from clients upon service completion or departure, offering valuable insights into their experiences, satisfaction levels, and suggestions for improvement. This method provides an opportunity for clients to express their opinions and concerns directly, helping to identify areas for quality improvement and enhancing patient-centered care.

Limitations: Client exit interviews may suffer from response bias if clients feel pressured to provide positive feedback or are hesitant to express negative experiences. Additionally, clients may not always be willing or available to participate in interviews, leading to potential selection bias. Finally, clients with the inclination, ability, and opportunity to seek and access health services may not be representative of the general population.

(Also see **Intercept Surveys** and **Client Feedback Forms or Discussions**.)

Client feedback forms or discussions

Advantages: Client feedback forms or discussions collect client opinions, suggestions, or complaints. They can serve as a mechanism for accountability and help inform service improvement. Paper-based forms can be easy for clients to access because they are usually located at the point-of-service. Online or mobile surveys reach clients who may not be able to provide feedback in person. Face-to-face individual or group discussions provide a more interactive and personalized approach, allowing for deeper exploration of client experiences and concerns.

Limitations: Clients may not be aware that feedback methods exist, and those that do may be hesitant to provide negative feedback, especially if they fear repercussions or if they perceive that their feedback will not lead to meaningful change. Paper forms may be poorly understood, and other types of feedback may require resources such as time and network connectivity that may not be feasible for many clients.

Health provider data

Health provider survey interviews

Advantages: In recent years, there has been a growing recognition that providers' perceptions, lived experience, and characteristics can shape the way they provide care. Many health facility surveys and supportive supervision visits tend to include interviews with providers, who are asked questions about their knowledge of guidelines, access to guidelines, training, and supervision. Questions related to norms, attitudes, perceptions of risk and efficacy, and other factors can be added to these interviews. Currently, work is being done to develop and validate these types of questions.[3] In addition to adding questions to the provider interviews of planned health facility surveys and supportive supervision visits, programs can utilize **intercept surveys** to collect data from providers during provider behavior change activities.

Limitations: Provider surveys may suffer from response bias, whereby respondents may provide answers that they believe are expected or socially desirable. Additionally, such surveys rely on self-reported data, which may differ from actual practice. Finally, it may be difficult to connect the effect or contributions of individual providers with facility data. Frequently, registers and other sources of facility data do not indicate which providers saw which patients and which services they provided. In such situations, data from multiple providers need to be pooled and results need to be interpreted in that light—for example, "Facilities with low group scores for norms had lower rates of malaria testing."

Other sources

Semi-structured interviews with health providers. See **semi-structured interviews** (pg.24). Also see the Examining Malaria Service Delivery tool (pg. 25).

Focus group discussions with health providers. See **focus group discussions** (pg.24).

Observations at health facilities. See **observations** (pg. 32). Also see **observations of client-provider interactions** (pg. 26) and the Malaria Service Delivery Assessment Too (pg. 25).

Credit: USAID/RTI: StopPalu+

An aunt makes sure her niece takes seasonal malaria chemoprevention (SMC) in Guinea.

Credit: Breakthrough ACTION-Nigeria

A radio producer interviews community members for a program on malaria.

[3] For more information, please contact the U.S. President's Malaria Initiative Social and Behavior Change Team.

Data sources related to program implementation

The following data sources can be generated directly by stand-alone SBC activities or malaria activities with SBC components.

SBC program data

- Activity forms and reports include summaries of activities conducted, materials developed, and numbers of participants.
- Attendance registers list participants at trainings, meetings, and other gatherings. When attendance registers are not feasible, estimates are reported in activity reports or training reports.
- Media monitoring reports track how many times a mass media material is aired, when it airs, and who airs it. Where available, ratings data estimate the percentage of TV or radio audiences that tuned into a broadcast.
- Supervision forms often include checklists to monitor the quality of work performed by implementers. Counts on the frequency and coverage of supervision activities can lend insight on the quality of SBC programming.
- Call records and SMS analytics allow for collecting the numbers of calls, topics, and type of callers to hotlines. Similarly, SMS analytics track how many SMS messages are sent, delivered, opened, and answered.
- Social media analytics/social listening data: See **content analysis**, above.
- Referral forms help monitor how many people were referred for services and how many of them sought the service.

Uses: These sources can be used for monitoring outputs and reach/coverage.

Other sources of SBC data frequently nested within other malaria programs

- Registration data provides a count of the eligible population for an activity that effectively serves as a census. It can include data about numbers of men, women, pregnant women, and children that can be used as a denominator for SBC program targets.
- Health facility registers or tally sheets are used by staff to track distribution and interpersonal contacts with households. CHW registers can contain data about the characteristics of a client, characteristics of an illness episode, types of services given, counseling given, referrals, and so forth.
- Post-campaign surveys are household surveys used to measure coverage of a community-wide activity such as SMC or an ITN distribution. The surveys can include questions about knowledge, attitudes, and practices, as well as exposure to SBC.
- ITN durability monitoring surveys sometimes contain questions to measure attitudes and practices related to net use and care. More information can be found at LLIN Durability Monitoring.

Also see **Data sources related to health service provision**.

Uses: These sources can be used for monitoring outputs and reach/coverage. When questions about household or client behavior and perceptions are included, these sources can also be used for formative research and to monitor intermediate and behavioral outcomes.

Activity data

Activity reports

Advantages: Activity reports provide crucial information on how many SBC activities are being implemented, allowing program managers to adjust activities when needed. These reports provide important program output and coverage/reach data such as information on how many activities were conducted and how many people participated. Qualitative fields can be added to provide nuance, for example, through quotes and stories of impact or challenges.

Limitations: The self-reported nature of activity reports can introduce inaccuracies. A system should be created for collecting these forms regularly from implementers and checking to ensure they are filled out correctly. Digital, real-time reporting forms and data review meetings can improve the speed and quality of data.

Attendance registers

Advantages: Attendance registers provide a systematic way to track participation in SBC activities, such as trainings and meetings. When participants fill out the registers themselves, these registers serve as a means of validating attendee numbers reported in activity reports. Completing attendance registers is considered a routine activity and does not pose a burden on participants. Registers can also provide useful qualitative information on who attended, what groups or organizations they represent, and what role they play in these organizations. This information can be used to assess whether priority audiences and stakeholders were reached by the activity.

Limitations: Attendance registers do not shed light on the level of participant engagement or whether each participant stayed for the whole duration of the activity.

Media monitoring reports

Advantages: Media monitoring reports are a type of activity report created by third-party agencies that track which radio or TV materials are being aired, at what time, and how often. This tracking allows the program to negotiate "make goods" or airings to make up for under-broadcasting. When media monitoring services are not available, broadcast logs can be requested from stations. Station logs can be verified by having community-based listeners listen to and log the dates and times of broadcasts.

Limitations: Media monitoring reports do not capture the depth of audience engagement or comprehension or the share of the target audience that was engaged. In most of the settings where malaria SBC programs work, they do not provide information on the share of viewership/listenership reached by media activities. This is better tracked through household surveys, omnibuses, or surveys of targeted audiences.

Supervision forms

Advantages: Supervision reports provide information on how often and how many activities were supervised, and trends in implementation quality can be tracked over time. The process of supervision itself is often used to collect and check activity reports. Some supervision activities also include cross-checks (or "back-checks") in which supervisors visit households to verify whether SBC activities were conducted as reported.

Limitations: Supervision data is not a definitive source of data on reach/coverage or intermediate outcomes, although it can be used to verify some of the data reported through other sources such as activity reports and referral forms. Supervision data is typically self-reported; it does not guarantee that supervision was done well or whether identified issues were correctly addressed.

Call records and SMS analytics

Advantages: SBC programs sometimes use SMS, hotlines, or toll-free numbers to connect clients to services and information. Call records contain information about phone calls made to a hotline. These records typically provide quantitative data on the numbers of calls received, the duration of each call, the numbers of calls that were terminated prematurely, the numbers of calls that were completed, and topics discussed. Call records may also include demographic information about callers (e.g., age, gender, and location), caller perceptions, and satisfaction with the hotline service, especially when the hotline uses automated means such as mobile or interactive voice response surveys to collect this information. Call records and SMS analytics, which can be accessed in real-time, make it easy to test incentives for hotline participation.

Limitations: Hotline users may not be representative of the overall target audience, since hotline use may depend on who can access phones and phone networks. Additionally, call records may not capture the reasons for calls being terminated prematurely or provide detailed insights into caller experiences or outcomes beyond basic metrics.

Also see **Content analysis** (which includes social listening for monitoring social media) above.

Referral forms

Advantages: Community-based implementers (such as CHWs, "model mothers," or religious and traditional leaders) can issue referral cards to select clients, such as pregnant women or individuals with a fever. From an SBC perspective, referral cards can serve as a tangible cue to action. Clients can then bring the card to the facility, and the SBC program can collect cards periodically. In this way, SBC programs can track how many referrals are made and how many are completed. SBC programs can review referral and health facility data to document their contribution to service utilization rates.

Limitations: Clients may not always present referral cards and facility staff may not collect or store the cards consistently, leading to the actual number of referrals completed being underestimated. Manual tracking systems, which require traveling to a facility to retrieve referral cards, may introduce errors or delays in data collection, hindering the timely analysis of referral trends. Referral data itself may not provide insights into the reasons behind incomplete referrals or the quality of services received; this information will need to be collected through interactions with referring agents, clients, and providers.

Other sources of SBC data frequently nested within other malaria programs

Registration data

Advantages: Prior to the mass distribution of malaria commodities or services (ITN, SMC, indoor residual spraying [IRS], immunization campaigns, etc.), malaria programs frequently visit households to quantify the eligible population and enroll them in the program. Registration data can include data about numbers of men, women, pregnant women, and children within specific communities, which is valuable information for planning SBC programs at the community level. These numbers can also serve as the target population for SBC activities. The process of registration usually has an SBC component in that contacted households can receive information about the value of the malaria program and how to access it, so registration data can be used to as a temporary proxy for the reach or coverage of SBC activities conducted during the registration phase, to be verified later (if possible) by surveys.

Limitations: Some groups or households may be underrepresented in registration data, particularly if they are not visited by registration teams or if there are other barriers to participating in the registration process (e.g., being away from home due to work at the time of the registration team's visit).

Distribution records, such as paper or digital registers or tally sheets

Advantages: The process of issuing malaria commodities and services (such as nets) is usually accompanied by documentation on registers or tally sheets. Distribution records can serve as a proxy for client service utilization, a type of behavioral outcome (e.g., 80% of registered households obtained a net). SBC activities such as counseling are frequently supposed to accompany issuing or distribution, and thus, distribution records can serve as a temporary proxy for measuring the *potential* numbers of clients counseled about healthy malaria behaviors. This information, which can be found in campaign reports and health facility records, can be further verified by exit interviews, intercept surveys, and household surveys.

Limitations: Distribution records do not guarantee that a client was counseled, nor do they lend insight on the quality of counseling conducted or which SBC activities (or other factors) drove service uptake.

Post-campaign surveys

Advantages: Post-campaign surveys are household surveys used to measure the coverage of malaria programs. They can include questions about knowledge, attitudes, and practices, as well as exposure to SBC. To save money, many mass ITN distributions leverage planned surveys such as MIS, DHS, and MICS to reach these objectives. The MBS can capture data on the reach of IRS and SMC as well, although it is not powered to have representative data on coverage outcomes. Some programs also choose to implement stand-alone surveys or rapid assessments to complement planned surveys to allow for rapid and timely adaptations to program activities. For example, end process monitoring of ITN or immunization campaigns is used to identify households or communities with low coverage and use rates that may need to be targeted for additional SBC activities in the months immediately after net distributions.

Limitations: The timing of routine household surveys may be too far away from program completion to inform rapid program adaptations. It may also be difficult to add questions specific to the malaria program of interest. A stand-alone survey may be more timely and tailored to the program, but it is also an added cost. Some surveys use a lot quality assurance sampling approach to identify whether a coverage target has been reached in a specific community or cluster. It can be less costly and can provide data at programmatically useful levels, but it does not result in a precise estimate. For example, it can only indicate whether or not the community or cluster had at least 70% coverage.

Durability monitoring surveys

Advantages: Durability monitoring surveys are a series of surveys conducted after ITN distributions over a three-year period to assess how well the insecticidal and physical integrity of nets are holding up over time. This information is used to understand product quality and guide decisions related to ITN procurement and distribution or replacement approaches. Durability monitoring surveys sometimes contain questions to measure attitudes and practices related to net use and care, particularly at baseline.

Limitations: Compared to household surveys, durability monitoring surveys have small sample sizes and are implemented in far fewer areas of a country. The questions are also limited to net use and care. For these reasons, durability monitoring surveys may not be fully representative of the target audience; however, they can shed useful insights on net use and care practices and their determinants.

Annex 1: Theories of Behavior Change

The indicators in this guide are based on previous research and theories about the determinants of behavior change for malaria, family planning, HIV, and other health areas. As such, it is highly recommended that all SBC programs be grounded in behavioral theory or a specific theory-based model or framework. **Data shows that improving knowledge alone is not enough to increase the uptake of desired behaviors.** Other factors, such as audience attitudes and characteristics of the desired behavior should also be considered.

The word "theory" is used differently in everyday speech and science. While the vernacular use of the word implies speculation, social science and scientific theories—such as the ones discussed in this section—refer to "an explanation of some aspect of the natural world that has been substantiated through repeated experiments" (Ghose, 2013).

Theories help us map where the audience is in the process of behavior change and how they will get to the desired change. Theories provide insights into the decisions, motives, barriers, and facilitators associated with change.

This section describes several commonly used behavior change and communication theories. While the theories share some similar elements, each emphasizes slightly different constructs and processes. In this annex, we provide an overview of each theory and how their constructs are reflected in the indicator guide.

Extended parallel processing model

The risk and efficacy indicators in this guide are based on the extended parallel processing model (EPPM)—also known as the risk perception attitude framework. The EPPM describes how reason and emotion interact during individual decision-making.

The model has two components: **fear or threat** (emotion) and **efficacy** (reason). Fear has two parts, severity and susceptibility. Efficacy—or confidence in one's ability to control or manage the threat or risk perceived—is composed of three parts: response efficacy, self-efficacy, and barriers.

Fear or threat

Perceived susceptibility refers to the belief that the disease or threat can actually happen to a person.

Perceived severity refers to how serious people believe the threat (malaria) to be.

Efficacy

Response efficacy refers to a perception that a proposed action or solution will actually control the threat. In the case of malaria, a person's belief that ITNs serve as good protection against malaria is an example of response efficacy.

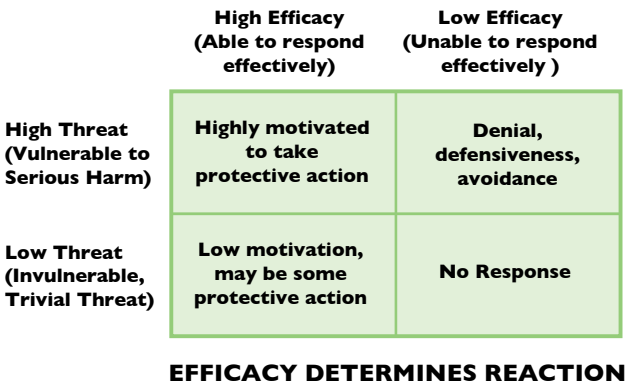
Self-efficacy is a measure of self-confidence that a person can perform an action to control the threat.

Putting it all together

Evaluators can expect desirable behavioral responses when people have strong risk/threat perceptions coupled with strong beliefs of efficacy toward the recommended response (Figure 1-1, top left box). When people experience significant fear but have little belief that they can take action or that their actions will be effective, they will be more likely to deny the importance of the issue, act defensively, or avoid it (top right box). If the threat is perceived not to be serious but the available measures are easy and effective, individuals may be slightly motivated to act (bottom left box). If the threat is not serious and there are no feasible or effective actions that individuals can take, they will likely do nothing about the issue.

For example, people may feel that ITN use is easy but feel little fear about the risk of malaria infection during the dry season (bottom left box). SBC activities may be designed to increase the perception that community members remain susceptible to malaria during the dry season and that its consequences can still be severe (top left box). Using the indicators provided, evaluators can measure the extent to which these programs affected perceptions of risk and efficacy, and whether these constructs were determinants of year-round ITN use.

Figure 1-1: Extended parallel processing model



Social cognitive theory

Social cognitive theory, also known as social learning theory, emphasizes the importance of modeling and self-efficacy. According to this theory, people learn by

1. Observing what other people do.
2. Observing what happens to those people as a result of their behavioral choices.
3. Evaluating the relevance and importance of those consequences for their own life.
4. Attempting to reproduce the action themselves.

Self-efficacy is an important part of this theory. According to Bandura (2004), "perceived self-efficacy affects every stage of personal change. It determines whether people even consider changing the behavior, whether they can enlist the motivation…and how well they have maintained the changes." Role-modeling should thus be oriented to build people's skills and their belief in being able to exercise those skills.

The first step, observing what other people do, is reflected in the indicator for norms (proportion of people who believe the majority of their friends and community members currently practice the behavior). Even if real behavior change has not yet occurred, SBC can increase the public's perception that change is occurring or has occurred, creating the necessary momentum and supportive environment for actual change. This indicator measures the ability of SBC strategies to persuade the intended audience that their friends, family, and fellow community members are adopting the recommended behavior, and that adherence to that behavior is increasing, decreasing, or staying the same.

The second step, observing what happens to those people as a result of their behavioral choices, is the basis for the indicators for perceived severity (proportion of people who feel that consequences of malaria are serious) and perceived response efficacy (proportion of people who believe that the recommended practice or product reduces their risk), respectively. Individuals gauge the impact these behaviors have had on others—whether they are rewarded or punished socially, materially, or physically—as they reflect on the relevance and importance of these consequences on their own lives (step 3). The indicator for perceived susceptibility (the proportion who feel that they are at risk of malaria), is an indication of step 3. The indicator for self-efficacy (the proportion of people who are confident in their ability to perform a specific malaria-related behavior) can be used to track changes in self-efficacy as a result of exposure to a campaign and how much self-efficacy has contributed to the desired behavior change.

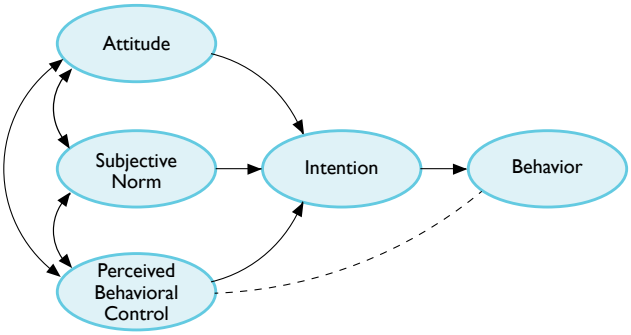
Putting it all together

SBC programs based on the social learning theory use relatable figures—figures like the target audiences—to model the health issues and build life skills. Examples from malaria include the use of model or lead mothers and zero malaria villages. Social learning theory has also been used in individual or small group activities in which participants have the opportunity to observe their peers and support for practicing the behavior.

Theory of planned behavior

According to the theory of planned behavior, people base their intentions on three things: whether they think the behavior is bad or good, what they think they are expected to do, and the extent to which they can carry out the behavior.

Figure 1-2: Theory of planned behavior



Attitude—Beliefs that the behavior is good or bad based on whether its outcomes are positive or negative. This construct is reflected in the indicators for attitudes and perceived response efficacy (proportion of people who believe that the recommended practice or product will reduce their risk).

Subjective norms—Perceived social pressure and beliefs about what an individual's peers expect them to do and whether they will be supported or ridiculed. The first part of this construct is reflected in the indicator for norms (proportion of people who believe the majority of their friends and community members currently practice the behavior).

Perceived behavioral control—Beliefs about whether an individual has the necessary knowledge, tools, and ability to carry out the behaviors is reflected in the indicator for self-efficacy.

Intention—According to this theory, the stronger a person's intention to practice a healthy behavior, the more likely that person will actually perform that behavior. However, it is important to remember that many outside factors and barriers can prevent an individual from performing a behavior, despite having an intention to do so. Intention is strongest when attitudes, subjective norms, and perceived behavioral control favor the behavior.

Putting it all together

The Malaria Haikubaliki (malaria is unacceptable) campaign in Tanzania sought to increase perceptions that ITNs are the socially accepted approach for avoiding malaria, foster people's confidence in their ability to use ITNs every night, and improve the fatalistic attitude that malaria is an unavoidable and constant presence in people's lives (Communication Initiative, 2011).

Table 1-1: Characteristics of innovations and related communication activities

Characteristic	Question	Explanation
Complexity	How simple is it to do?	These questions can be answered in all forms of media and communication.
Compatibility	Does it work for me?	
Observability	Can I see it?	Even if a person has never seen something, hearing a friend or a community leader speak positively about it could encourage them to use it.
Trialability	Can I try it?	A person may never be able to try something, but seeing someone else go through the experience on TV or in a community drama could have a similar effect.

The program's initial evaluation demonstrated that exposure to the activities improved the self-efficacy necessary to take action to prevent malaria. Nearly 77% of those exposed to the program put all their children under ITNs the previous night, as opposed to 34.6% of those unexposed to the program. Exposure to the campaign significantly increased the perception that ITNs are effective in stopping malaria and the belief that ITNs are useful and easy to use.

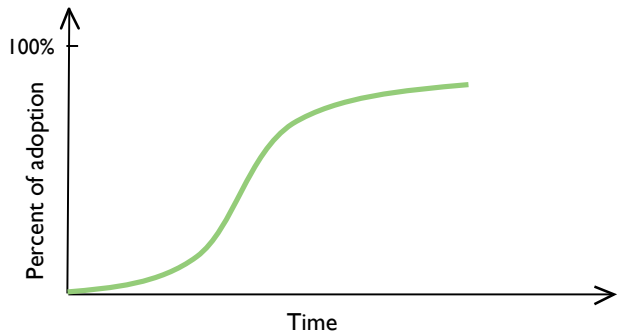
Social norms and the belief in one's ability to use ITNs effectively were also significantly associated with ITN ownership. Thus, those exposed to the campaign activities shifted their attitudes and were more likely to act on their intention to use an ITN.

Diffusion of innovations

The diffusion of innovations theory describes several factors that influence how quickly an idea or behavior is adopted. The diffusion depends on characteristics of the innovation, communication channels, period of time, and the social system.

Figure 1-3 represents the diffusion S-curve. It illustrates how people are initially slow to adopt new behaviors, but as the behavior becomes better known and accepted, more people quickly start to practice it. Eventually the behavior becomes commonplace with fewer new adopters.

Figure 1-3: Diffusion S-curve



Some innovations, such as mobile phones, quickly become popular, while others require more explanation and practice before they are adopted. Effective communication can help an innovation become more popular, making the curve steeper. Similarly, the characteristics of an innovation or health behavior will influence how rapidly it can be adopted. Table 1-1 describes the main characteristics of an innovation as well as what they mean for program implementation. As people become more familiar with an innovation, they are more likely to adopt it.

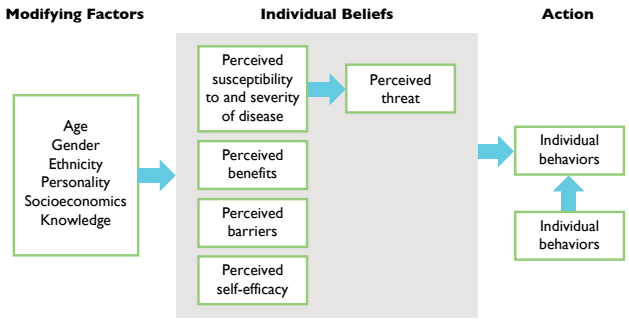
Putting it all together

SBC programs can use the diffusion of innovations model to develop messages and approaches. Indicators for self-efficacy and attitude are similar to the characteristics of complexity and compatibility. SBC approaches that create conditions for observability and trialability can be created. One example is the use of demonstrations to encourage net hanging when sleeping outdoors. These activities helped community members understand how ordinary household materials could be used for hanging a net outdoors, and the community members were given opportunities to practice.

The health belief model

This model illustrates the importance of beliefs about the risks, benefits, barriers, and self-efficacy in behavior change. According to this model, individuals are likely to act to reduce their risks if they regard themselves as susceptible to malaria; believe that malaria would have potentially serious consequences; believe that ITN use, IPTp, testing, and treatment would be beneficial in either reducing their susceptibility to malaria or alleviating it severity; and believe the benefits of the behavior outweigh the barriers. The model also argues that a cue to action is needed to trigger preventive action (Glanz et al., 2008). The model differs from the others in that it does not explicitly state the role of emotion (such as fear, as in EPPM).

Figure 1-4: The health belief model (Glanz et al., 2008)



Putting it all together

The Health Belief model can be used guide SBC programs to intentionally assess and address the above-listed perceptions that influence behavior. One example of a cue to action may be "If your child has a fever, go to a health center immediately." Implementers using the health belief model should evaluate the role of recall of the specific cue to action given in the campaign.

The ideation model

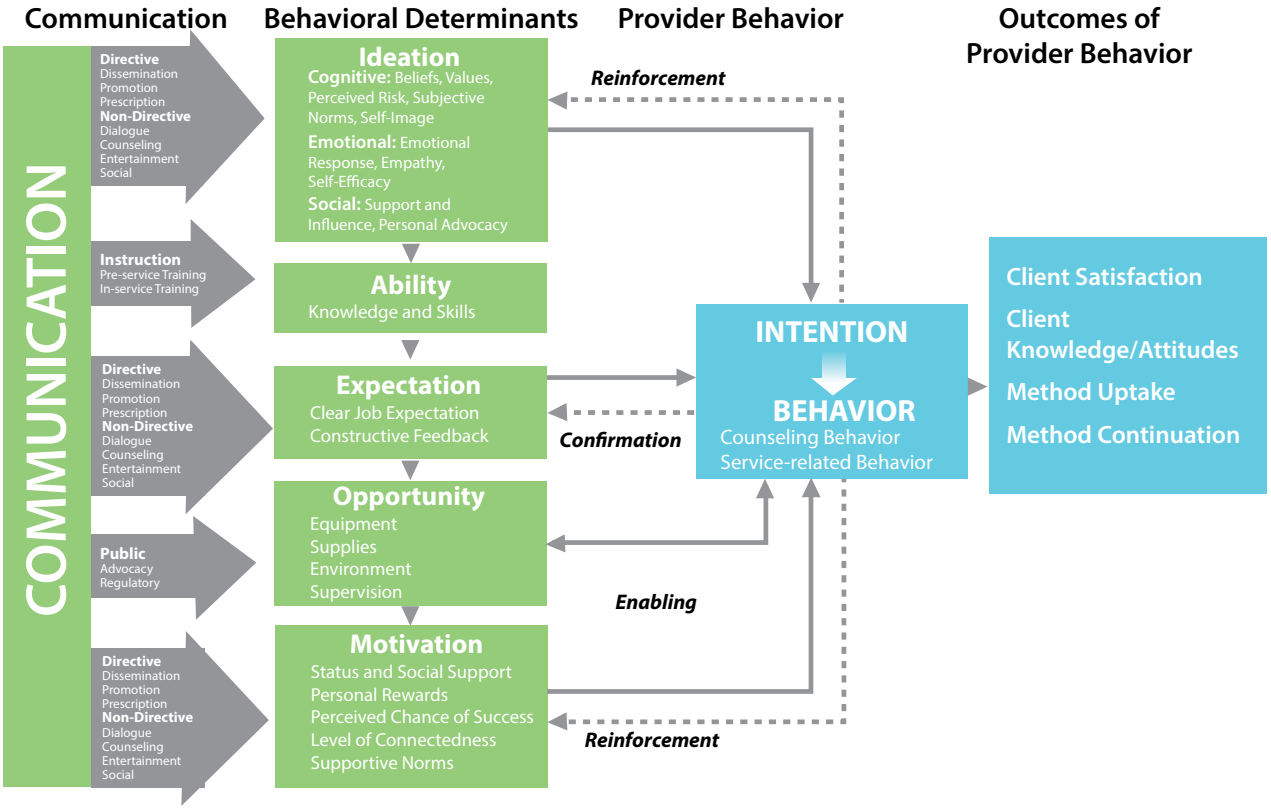
Ideation is a model for understanding how new ways of thinking, or behaviors, are diffused among individuals and groups through communication and social interaction. The model is crosscutting and incorporates many of the concepts found in the previously mentioned models. Ideation should be used when planners want to identify the psychological factors that predict behavior or try to causally attribute behavior change to SBC activities. By creating a combined ideational index, researchers can show that individuals who have more ideational factors are more likely to adopt a given behavior. The likelihood of someone adopting and sustaining a new behavior is much higher when that individual

- Has gained sufficient knowledge about it.
- Has developed a positive attitude toward it.
- Thinks others support and practice it.
- Has talked to others about it.
- Feels good about doing it.

Putting it all together

Figure 1-5 suggests that SBC can affect all of the ideational factors simultaneously. Statistical analyses make it possible to identify which of these factors are the strongest predictors of behavior, providing guidance about what SBC strategies should emphasize. While the graphic depicts the influence of communication, non-communication approaches can do this as well. For example, a group ANC program creates a supportive environment for pregnant women to complete their ANC visits, influencing their perceptions of social norms, knowledge, self-efficacy, and risk.

Figure 1-5. The ideation model



Behavioral economics

Behavioral economics, also known as behavioral science, is the study of human decisions and actions (Figure 1-7). While it acknowledges many of the behavioral factors identified in the other behavioral theories listed above, behavioral economics is unique for unpacking how context and human psychology can have a surprisingly powerful effect on our behavior. According to behavioral economics, human brains take shortcuts to help them process information and make decisions due to time and energy constraints. These shortcuts are called heuristics or cognitive biases. While they can save time and energy, they may not help people make optimal (or rational) decisions. Over 200 cognitive biases have been identified so far. Insights from behavioral economics allow us to predict and account for these effects on behavior when designing products, programs, and policies.

Dual process theory, also popularly known as Systems 1 and 2 thinking, are terms that describe two types of ways human brains process information (Figure 1-7). System 1 is fast, intuitive, and emotional, while System 2 is slower, deliberate, and effortful. Humans use both to some extent in most decisions, although System 1 thinking is dominant because of the amount of time and effort it would take if System 2 controlled every action. Both are also prone to cognitive biases, although humans can use System 2 thinking to (a) slow down and consciously and effortfully try to identify biases that influence their behavior or (b) to choose a "rule-of-thumb" to navigate a situation (e.g., to look for a green cross when searching for a health facility on a busy street).

Putting it all together

Formative research has shown that providers default to prescribing ACTs rather than requiring tests or following test results when they feel challenged by time constraints and workload. Ordering or administering a test and waiting for results adds extra steps and time to the provider-client interaction, time providers may not have. A behavioral economics approach (Haqqi et al. 2022) includes simplifying malaria service delivery processes so patients with a history of fever are tested before they meet with the prescribing provider. The prescribing provider then receives malaria test results immediately upon their first encounter with the patient and can prescribe accordingly. In addition to reducing providers' workloads, the program includes provider group discussions to address common prejudices about malaria tests and strengthen norms and expectations among providers in facilities. Relevant intermediate outcomes include self-efficacy, norms, knowledge, and response efficacy, and for behavioral outcomes, provider testing and treatment.

Figure 1-6: Behavioral economics acknowledges the structural, social, and cognitive influences on human behavor

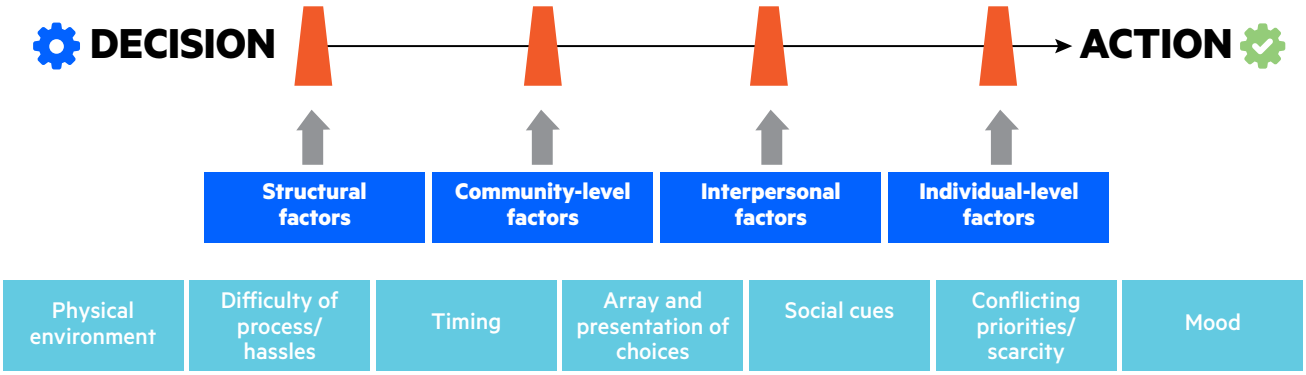
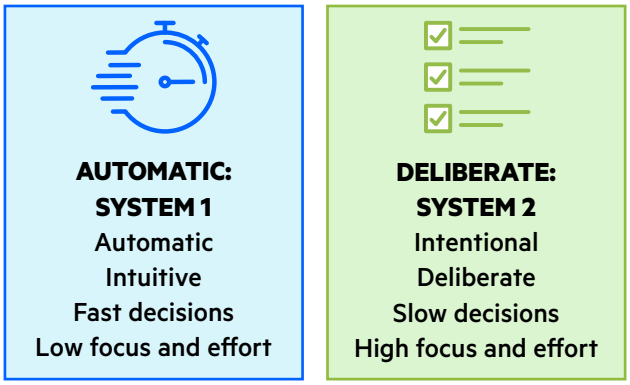


Figure 1-7: Systems 1 and 2 thinking

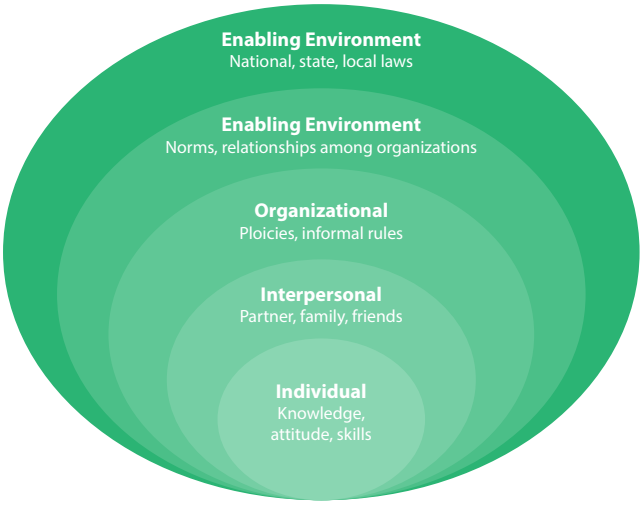


Socio-ecological model

In the socio-ecological model, behavior change is considered in the context of multiple levels, including the individual level; interpersonal level, or relationships with partners, families, clients, and friends; organizational level; community level; and the enabling environment.

In recent years, this model has gained more attention for its relevance to provider behaviors, given that the workplace context can have a pronounced effect on service delivery.

Figure 1-8: Socio-ecological framework for SBC; adapted from McLeroy et al. (1988)

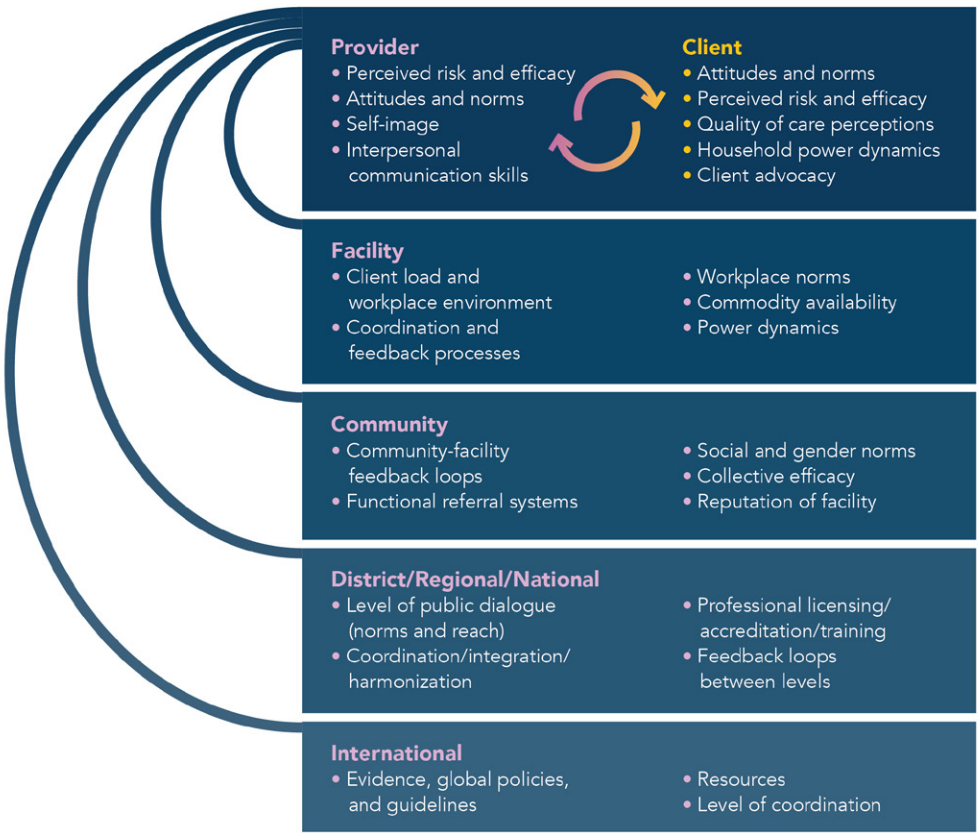


Putting it all together

Most of the intermediate outcome indicators in this guide mostly occur within the individual and interpersonal/ community levels. Knowledge, perceptions of risk and efficacy, and attitudes, tend to reflect individual-level factors, while norms refer to perceptions related to the interpersonal or community level. Reach or coverage indicators reflect the community level by assessing the extent to which SBC programs have penetrated and engaged the target population within a specific geographic area. As mentioned above, indicators related to the enabling environment mainly require triangulating multiple data sources. In recent years, efforts have been made to assess factors influencing provider behavior using a socio-ecological lens; these include health facility surveys that include a mix of sources such as client interviews, provider interviews, and facility audits, as well as qualitative tools that examine the facility environment, workplace dynamics, and provider perceptions.

SBC programs that use a socioecological approach typically try to improve individual/provider attitudes and provider and client interactions (e.g., through interpersonal counseling and communication), change social norms, and strengthen relationships between communities and facilities. They also seek to change facility processes and norms that impede provider adherence to guidelines and/or client access to care.

Figure 1-9: A malaria service ecosystem, from "A Blueprint for Applying Behavioral Insights to Malaria Service Delivery" (Breakthrough ACTION and Impact Malaria, 2020). Another variation, the Provider Behavior Ecosystem, is found in the Resources section.



Annex 2. Indicator Reference Sheets: Guidance for Constructing and Interpreting Select Indicators

The indicators in this annex are organized by the following categories: program outputs, reach/coverage, intermediate outcomes, and behavioral outcomes. This section contains indicator reference sheets which describe the rationale, definition, numerator, denominator, measurement, use and interpretation, disaggregation, strengths, and limitations for several indicators. Additional optional indicators are also provided and can be obtained through survey questions or through sub-analyses. Related survey questions and other considerations for measurement are described in Annex 3. Please see pages 8-11 and the Resources section for additional information for any indicators not listed in this Annex.

Program output indicators

Program output indicators reflect the numbers and types of SBC activities completed. Documenting these can help reveal whether the amounts and types of activities conducted were sufficient to reach the target population.

Number of materials or approaches developed

Rationale. SBC materials produced are the first step toward influencing behavior change. Communication-related materials may include radio spots, banners, or counseling aids. Communication and non-communication approaches may be used. Examples of non-communication approaches include changes in processes or placement (see **Behavioral economics**, in Annex 1. Even SBC programs that do not have a communication focus may entail creating materials to test approaches, orient personnel, or nudge users (e.g., prototypes, signs, feedback charts, and trainings). This program output indicator is meant to capture the creation of those messages and/or materials.

Definition. Each new SBC activity, such as a radio spot, prototype, or training counts as a type of material or approach. Materials and approaches should include information about malaria prevention and treatment.

Numerator. Number of materials or approaches developed, by type.

Denominator. None.

Measurement method. This indicator is measured through project records, such as activity reports or invoices and delivery notes from vendors. Records should show how many materials were produced.

Disaggregation. This indicator can be disaggregated by type of materials produced, such as posters, radio advertisements, or billboards. Alternatively, they can be disaggregated by theme (such as malaria prevention or early treatment) or target audience.

Data use and interpretation. This indicator provides a quantifiable way of measuring effort, specifically, the number of materials or approaches developed; however, it is not the same as dissemination. Delayed or insufficient production of materials can have a great impact on the success of a SBC activity. Comparing this indicator to interim targets can help managers understand if that is a risk.

Strengths. This indicator is easy to measure.

Limitations. The indicator does not show whether the materials and messages were of good quality.

Number of SBC activities carried out

Rationale. This indicator provides information on whether SBC activities are being implemented as planned.

Definition. This indicator measures the number of activities carried out. Examples of SBC activities include home visits, community demonstrations, or television or radio broadcasts.

Numerator. Number of SBC activities carried out. Note: This indicator can be easily adapted to state the actual activities used. Potential adaptations include “Number of community dialogues” and “Number of times messages aired on radio or television in [period, e.g., three months].”

Denominator. None.

Measurement method. This indicator can be measured through program records that note the number activities carried out. SBC programs may wish to also gather data on characteristics of program participants—such as age, sex, and location—to provide more contextual information to this indicator.

Disaggregation. This indicator should be disaggregated by the type of SBC activity.

Data use and interpretation. This indicator provides a measure of the implementation of a SBC activity, by indicating the number of various activities carried out in a given

reporting period. This indicator can be used to ensure that a SBC activity is on track according to the activity work plans. If SBC activities are not taking place according to plan, then the expected behavior change is unlikely to occur.

For mass media, once program evaluators have information on the number of times a message or material has been aired, they can triangulate this information with data from the radio and television stations on approximate geographical coverage of their broadcasts, as well as census data to calculate a rough estimate of how many people were reached by the broadcasts.

Strengths. Measuring the number of SBC activities carried out can provide an indication as to progress of the program. This indicator should be disaggregated by SBC activity, providing managers with detailed information about implementation activities.

Limitations. While the indicator measures the number of activities carried out, it provides no information about the quality of activities. Furthermore, this indicator does not provide information on whether the activities occurred on time.

Number of people trained in SBC for malaria

Rationale. This indicator serves as a measure of SBC training outputs. Managers can use it to determine whether a program is meeting its training targets and/or for tracking progress from one year to the next. When aggregated, it also represents the human resource potential of people who could help carry out malaria SBC activities.

Definition. This output-level indicator measures the number of people who have completed a training course in malaria SBC. An individual should only be counted after they have completed the training. Individuals that are mid-way through a training course should be counted in the next reporting period. Individuals attending more than one training provided by the SBC program during a reporting period should be counted only once.

Numerator. Number of people who have completed a training in malaria SBC.

Denominator. None.

Measurement method. Number of people trained is based on the final list of participant names, for potential verification of attendance and training topic. The data sources for this indicator include training sign-in sheets, training reports, and program reports.

Disaggregation. Data can be disaggregated by training type, age, gender, and geographic areas.

Data use and interpretation. This indicator provides a measure of the available human resources trained in malaria SBC. The number of people trained provides an indication of the capacity of the program to carry out the intended SBC activities.

Strengths. As a simple count, this indicator is easy and inexpensive for programs to provide.

Limitations. This indicator does not capture the number of participants who become actively involved in malaria SBC. A further step would be to measure the percentage of people were trained in malaria SBC and who are active during a certain period. This indicator does not provide information on knowledge gained or the quality of the training.

Number of referrals made, by type of service

Rationale. This indicator documents the SBC program's efforts to connect target audiences to malaria services.

Definition. This is the quantitative count of referrals initiated by the SBC program, categorized by type of service (e.g., ANC, case management, vaccine, and in some instances, SMC).

Numerator. Number of referrals made by the SBC program, categorized by the types of services recommended.

Denominator. None.

Measurement method. Referrals are measured by systematically by recording and tallying the number of referrals made for each type of service. This may include maintaining referral logs, databases, or digital systems to track the details of each referral. The indicator is calculated by calculating the total number of referrals across and by category.

Disaggregation. Data for this indicator can be disaggregated based on the type of malaria service, demographic factors or client type, geographic location, and time periods.

Data use and interpretation. The data can be used to assess the program's reach and identify trends in referral patterns. For example, which time points, populations, and services have the most and the least number of referrals can be identified.

Strengths. As a simple count, the indicator is a relatively feasible way to demonstrate the SBC programs efforts to connect people to services.

Limitations. This indicator does not measure the quality of the referral process nor assess whether individuals successfully accessed the recommended services. As a self-reported measure, it can also be subject to bias; primary (e.g., retained portions of referral slips) and secondary (e.g., registers and tallies) data sources should be compared to validate the data.

Reach or coverage indicators

Reach and coverage indicators signify the volume of people who have had direct or indirect contact with the SBC program. These indicators are recommended because SBC programs generally aim to reach a critical mass of the target population to effect change.

Number of people /facilities/community groups participating in or reached by SBC activities

Rationale. This indicator measures the volume of people, facilities, or community groups that participate in SBC program activities or use program services.

Definition. This indicator measures the number of people, providers, facilities, or community groups that have received program services, have participated in community mobilization activities, or have been exposed to the program's mass media broadcasts.

"People" can refer to the general population or target audiences such as pregnant women, youth age 19-25, caregivers of children under five, or providers.

"SBC activities" include communication and non-communication activities. For example, participating facilities and providers may conduct health talks, implement facility makeovers, institute procedural changes, or introduce quality assurance processes.

Numerator. Number of people who participated in a program activity.

Denominator. None.

Measurement method. This indicator is measured using program data or comparable data indicating the number and characteristics of people, community groups, or facilities served by the program. Responses to survey questions on exposure to or participation in program activities can also be used. Managers should compile statistics separately for each major type of activity.

Staff can compile data on the number and characteristics of people who attend interpersonal communication activities. Getting an accurate count can be hard in large community gatherings, so staff should estimate the number of participants by visually breaking up the audience into separate sections (of about 25 to 35 people), count how many people are in that section, then multiply that by the number of "sections" that appear to be in the audience.

To estimate the reach of mass media programs, media monitoring agencies can use TV meters and panel surveys to estimate the number of people who listened to a broadcast.

Social media analytics tools can provide this data. Care should be taken not to confuse "impressions" with "reach" or "engagement." Reach refers to the number of unique viewers, which is the indicator described in this document; whereas, the number of impressions refers to the number of times a social media post has been viewed, and engagement refers to interactions such as liking or commenting on a post. Some people will view a post or engage with it multiple times, and for this reason, the number of unique viewers (or reach) will be smaller than impressions and engagement.

Disaggregation. Managers should subdivide this indicator by the total number exposed by the type of activity, such as a community activity, school-based program, or clinical services. Another way to disaggregate the data is by type of participate (e.g., facility type, group type). Individual participants can also be classified by characteristics such as age, gender, marital status, type of target audience (e.g., pregnant women, caregivers of children under five, providers), and the geographic location of the activity.

Data use and interpretation. This indicator can be used in several ways. First, it provides insight on whether SBC activities are reaching a large number of people, which can be useful when advocating or accounting for resources for SBC. Second, SBC program managers should ascertain if the program reaches the numbers targeted, and especially any key subgroups. For example, if current SBC activities are falling short of engaging or reaching the targeted number of caregivers for children under five, different approaches may be needed. Finally, this indicator can be triangulated with the indicator "number of SBC activities carried out" and cost data to see if the average reach of each activity is as expected and which activities appear worth the cost.

Strengths. This indicator is relatively easy to provide for smaller scale interpersonal communication activities and service statistics.

Limitations. This indicator does not provide information about the effectiveness of each channel in changing behavior. It does not measure the engagement of the community members, if the target audience was reached, or how well the objectives of the meeting or event were achieved.

It may be very difficult to obtain an accurate count of the number of attendees at large community mobilization gatherings; therefore, program records must rely on best estimates. Double counting is inevitable at well-attended events occurring in the same or even nearby communities.

Media monitoring agencies with the capacity to monitor ratings use sophisticated technology and high technical capacity. Because of this, these agencies may be prohibitively expensive or may not be able to offer audience measurements for community radio or TV stations.

Percentage of people who recall hearing or seeing any malaria message within the last six months

- **Additional optional indicator:** Percentage of people who recall hearing or seeing specific malaria messages (reported by each specific message).
- **Additional optional indicator:** Percentage of people who recall hearing or seeing a message through communication channel "X" (reported by each specific communication channel).

Purpose. Exposure of the target population to SBC activities is the primary outcome of SBC. Exposure is the critical first step to increasing knowledge of the products, practices, or services that may influence an individual to adopt or change a behavior. The target populations' ability to recall messages about malaria is an indicator of how widely SBC activities have penetrated the target audience. Respondents can then be asked about recall of specific messages and the channels through which the communications were received.

This indicator is particularly useful after an SBC activity has taken place to measure the reach and effectiveness of the messages. The additional optional indicators also provide information on the effectiveness of different communication channels and can provide valuable input into the planning for the next SBC activity.

Definition. This indicator is defined as the percentage of respondents who recall any malaria message that they have either seen or heard in the past six months. Respondents are asked about the type of messages they saw or heard, as well as about specific campaign messages. The additional optional indicators provide more precision with regard to the specific messages seen or heard and the communication channel through which the message was transmitted.

Numerator. Number of respondents who recall hearing or seeing any malaria message during the last six months.

Denominator. Number of respondents surveyed. For the additional optional indicators, the denominator should be "Number of respondents who reporting hearing or seeing a malaria message in the last six months."

Measurement method. See the survey questions provided in Annex 3. These questions can be used for household surveys as well as other types of surveys and data sources (e.g., IVR, SMS). When used as part of qualitative research, the results can remain quantified (e.g., "7 in 10 focus group participants had heard X"), and respondents can further be invited to share their recollection of what themes or messages they heard and through which means.

Disaggregation. This indicator can be disaggregated by various characteristics to provide program implementers with a clear idea of the reach of their program. Data may be disaggregated by, for example, age, sex, residence (rural/urban), geographical area (province/district or malaria endemicity), education levels, and wealth quintiles.

Data use and interpretation. This indicator provides a measure of the reach and penetration of SBC programs in a target audience. The additional optional indicators provide information on the relative strength of specific messages in reaching the target audience and the most effective means through which the audience received messages. Results from this indicator can inform the extent to which and the areas in which future SBC activities should be intensified.

Strengths. Responses can be tailored to the campaigns and messages relevant to the local context. For example, schools can be added as an answer choice if schools were used as part of the SBC program.

Only a few questions are needed to construct indicators

The complete-the-phrase and/or recognize-the-logo questions mitigate social desirability bias because they are more specific to actual campaigns

Limitations. The results may be subject to bias/confounding because of the use of probing, as probing/prompting styles may not be uniform across interviewers.

The results may be subject to recall bias with a six-month look-back period and would not capture communication campaigns implemented prior to the past six-month period without risking further bias.

The primary indicator—recall of any malaria message in last six months—does not provide sufficient detail to inform programmatic decisions, thus, additional indicators are required for more meaningful information.

Percentage of referrals completed, by type of service

Purpose. To assess the effectiveness of referral systems. This indicator provides insights into the extent to which individuals seek the recommended services.

Definition. The percentage of individuals who were successfully referred to specific services as recommended by the SBC program.

Disaggregation. Data can be disaggregated by type of service (e.g., ANC, case management, vaccination) or by the referring provider or staff member.

Numerator. The number of referrals completed, by type of service.

Denominator. The number of referrals made, by type of service.

Measurement method. The numerator is usually obtained through retained portions of referral slips withheld by SBC program staff and is summarized in activity reports. Clients are asked to bring the other part of the referral slip to a participating facility. The denominator is usually obtained by collecting referral slips from participating facilities and then summarized in activity reports. When digital referrals are

used, they are usually linked to an identifier such as a client's phone number, and completion rate information is provided by the database.

Data use and interpretation. A high percentage indicates a successful referral process, suggesting that individuals are accessing and completing the referred services. A low percentage may signal barriers or challenges in the referral pathway that need attention. SBC programs can use this indicator to refine strategies, address barriers, and improve the overall impact of their referrals.

When disaggregated by type of service/or patient type, the SBC program can get a better sense of which services and/or groups need to be targeted for additional follow-up.

Tracking referral completion rates over time can also be useful for understanding seasonal variations, emerging challenges, or improvements in the referral system's performance.

Changes in completion rates may be a function of the denominator (number of referrals made). Decreases in referrals may increase the completion rate, and increases in referrals may result in the opposite. It is wise to compare trends in the numbers of referrals made as well.

Strengths. When combined with facility data on service provision trends over time, this indicator helps demonstrate the impact an SBC program may have on service uptake.

Limitations. This indicator does not provide reasons for noncompletion of referrals. The numerator is dependent on providers collecting referral information from clients. For this reason, the indicator is prone to underestimation when providers do not collect and store referral data from clients or when clients obtain the service from an out-of-network provider.

Intermediate outcome indicators

Intermediate outcome indicators help SBC programs track changes in perceptions. They help SBC programs understand how people think and feel about the malaria behavior, product, or service. They are key precursors to behavior change. When perceptions favor malaria behaviors, but malaria behaviors do not change, other factors such as access may be the main impediments to behavioral uptake. The recommended priority indicators include several types of intermediate outcome indicators: knowledge, perceived severity, perceived susceptibility, perceived self-efficacy, and perceived response efficacy.

Knowledge

The indicators in this section identify knowledge gaps related to malaria prevention and treatment in the population. Knowledge gaps are particularly important to identify in the formative research stages of the cycle, as they help provide explanations as to why certain behaviors may not be adopted and can guide the design and development of SBC programs. These indicators can be measured separately or can be combined to create a composite indicator.

Percentage of people who name mosquitoes as the cause of malaria

- **Additional optional indicator:** Percentage of people who name only mosquitoes as the cause of malaria.
- **Rationale.** This indicator helps an SBC program assess knowledge gaps related to the causes of malaria in the target population. The additional optional indicators specifically helps identify which percentage of the population names only mosquitoes as the cause of malaria and which proportion believes that other factors (such as green mangoes), in addition to or instead of mosquitoes, cause malaria. Members of the target population who know what causes malaria, and especially those who do not hold misconceptions about the causes of malaria, are generally more likely to engage in appropriate preventive measures.

Definition. The proportion of people surveyed who know the cause of malaria.

Numerator. Number of respondents who name mosquitoes/ mosquito bites as the cause of malaria.

Denominator. Number of respondents surveyed.

Measurement method. See the survey questions provided in Annex 3. These questions can be used for household surveys as well as other types of surveys and data sources (e.g., IVR, SMS). For qualitative research, the use of this indicator can look like a discussion of what people in their community believe causes malaria, how illness develops, what the appropriate preventive measures may be, and if those perceptions have changed since the SBC program started.

Disaggregation. These indicators can be disaggregated by various characteristics such as age, sex, residence (rural/ urban), geographical area (province/district or malaria endemicity), education levels, and wealth quintiles.

Data use and interpretation. Collecting data on this indicator over multiple time periods can help assess changes in knowledge within the community. A high proportion of people correctly naming mosquitoes (especially only mosquitoes) as the cause of malaria suggests that a significant portion of the population understands the connection between mosquitoes and malaria transmission. Disaggregated information can help SBC programs identify the specific pockets of the

populations where this knowledge is not widespread and who should be targeted. When levels of this type of knowledge are high but behavioral gaps remain, attention should be paid to other outcome indicators. However, SBC programs should seek to sustain high levels of this type of knowledge, as misconceptions can emerge. When tracked over time, this information can be used to ascertain whether the population's knowledge of the causes of malaria has improved.

Strengths. This indicator provides useful formative data to determine the target audience's knowledge needs. Moreover, few questions are required to measure each knowledge indicator.

Limitations. The indicator is subject to bias/confounding with use of probing, as probing styles may not be uniform across interviewers. It is also difficult to link knowledge to any specific SBC activities without referencing actual messages. While knowledge alone may not be sufficient to change behavior, it is an important antecedent to behavior and many of the other behavioral factors described in this document.

Percentage of people who know the main symptom of malaria is fever

- **Additional optional indicator:** Percentage of respondents who know the danger signs and symptoms of severe malaria.

Rationale. This indicator aims to determine whether individuals are informed about one of the most common and recognizable symptoms of malaria, which is fever. Recognition of the main symptom of malaria, coupled with the knowledge of recommended treatment measures, may make them more likely to take immediate action, such as seeking medical care, undergoing diagnostic testing, and initiating appropriate treatment.

Definition. The proportion of people surveyed who know the main symptom of malaria.

Numerator. Number of respondents who know that the main sign/symptom of malaria is fever.

Denominator. Number of respondents surveyed.

Measurement method. See the survey questions provided in Annex 3. These questions can be used for household surveys as well as other types of surveys and data sources (e.g., IVR, SMS). In qualitative research, the use of this indicator can look like a discussion of what people in their community believe are the main signs and symptoms of malaria, and the extent to which those perceptions have changed since the SBC program started.

Disaggregation. These indicators can be disaggregated by various characteristics such as age, sex, residence (rural/urban), geographical area (province/district or malaria endemicity), education levels, and wealth quintiles.

Data use and interpretation. Data from this indicator can be used to design SBC programs that focus on raising awareness about the primary symptom of malaria. Disaggregated information can help SBC programs identify the particular populations to be targeted. When tracked over time, this information can be used to assess whether the population's knowledge of fever as a malaria symptom has improved.

Strengths. This indicator provides useful formative data to determine the target audience's knowledge needs. Moreover, few questions are required to measure each knowledge indicator.

Limitations. The indicator is subject to bias/confounding with use of probing, as probing styles may not be uniform across interviewers. It is also difficult to link knowledge to any specific SBC activities without referencing actual messages.

Percentage of people who know the recommended way to diagnose malaria is with a test

Rationale. This indicator measures the percentage of people who understand that the recommended method for malaria diagnosis, as per national guidelines, is through testing. Awareness of the recommended diagnostic method is important for improving prompt and appropriate care-seeking, management of suspected malaria cases, and surveillance. It is useful to measure among both providers and caregivers/clients.

Definition. The percentage of respondents surveyed who know that tests are the recommended way to accurately diagnose malaria.

Numerator. Number of respondents who cite malaria tests (RDTs and/or microscopy) as the only way to be certain that a child has malaria

Denominator. Number of respondents surveyed.

Measurement method. Household interviews, provider interviews (as part of a health facility survey), or group discussions with providers are some ways this indicator has been measured. Questions such as "According to the national guidelines, how should malaria be diagnosed?" can be asked. When used in qualitative research, knowledge about malaria diagnosis can look like a discussion of how people or providers in their facility know when someone has malaria.

Disaggregation. This indicator can be disaggregated by various characteristics such as age, sex, residence (rural/urban), geographical area (province/district or malaria endemicity), provider type, and facility type.

Data use and interpretation. Data from this indicator can inform training and quality assurance programs for health care providers. If the proportion is low, targeted training sessions can be organized to ensure that providers are aware of the critical role of testing in malaria diagnosis. Similarly, data from this indicator can inform SBC activities among the general population and among caregivers of children under five. People who may lack this information may be less likely to seek care from an appropriate provider, more likely to self-medicate, and delay care-seeking.

When tracked over time, this information can be used to assess whether providers' and the populations' knowledge of malaria diagnosis has improved.

This indicator can be adapted to measure correct knowledge of malaria diagnosis among community members or caregivers. As written, this indicator recognizes the primacy of providers in diagnosis, but it also acknowledges that patients' demand for antimalarials or tests can influence diagnostic practice. It is theorized that awareness about current diagnostic best practices, combined with perceptions about the reliability and accuracy of malaria tests (response efficacy), helps predict diagnosis and adherence.

Strengths. This indicator provides useful formative data to determine the target audience's knowledge needs. Moreover, few questions are required to measure each knowledge indicator.

Limitations. The indicator is subject to bias/confounding with use of probing, as probing styles may not be uniform across interviewers. It is also difficult to link knowledge to any specific SBC activities without referencing actual messages.

This indicator seems similar to response efficacy in that it touches on the respondent's perceptions on the effectiveness of malaria tests. However, it does not test the strength of that belief, nor does it specifically examine providers' beliefs around the accuracy of microscopy and RDTs in field conditions.

Percentage of people who know the treatment for malaria

Rationale. This indicator helps SBC programs determine the percentage of individuals (potential care seekers) who are informed about the appropriate treatment for malaria. This can be helpful in contexts where multiple types of medications—recommended and not recommended—are available and often used.

Definition. The proportion of people surveyed who know the appropriate treatment for malaria.

Numerator. Number of respondents who know that the appropriate treatment for malaria is ACTs (depending on the country context).

Denominator. Number of respondents surveyed.

Measurement method. See the survey questions provided in Annex 3. These questions can be used for household surveys as well as other types of surveys and data sources (e.g., IVR, SMS). When used in qualitative research, knowledge about appropriate treatment can look like a discussion of what people in their community believe are the appropriate treatments for malaria, and if those perceptions have changed since the SBC program started.

Disaggregation. These indicators can be disaggregated by various characteristics such as age, sex, residence (rural/urban), geographical area (province/district or malaria endemicity), education levels, and wealth quintiles.

Data use and interpretation. Data from this indicator can inform the design and targeting of SBC programs. If the proportion is low, tailored activities can be developed to improve knowledge about malaria treatment options. When tracked over time, this information can be used to assess whether the population's knowledge of appropriate treatment for malaria has improved.

Strengths. This indicator provides useful formative data to determine the target audience's knowledge needs. Moreover, few questions are required to measure each knowledge indicator.

Limitations. The indicator is subject to bias/confounding with use of probing, as probing styles may not be uniform across interviewers. It is also difficult to link knowledge to any specific SBC activities without referencing actual messages.

Percentage of people who know recommended prevention measures for malaria

Additional optional indicator: Percentage of people with misconceptions about effective malaria prevention practices (sub-analysis).

Additional optional indicator: Percentage of people who are aware that IPTp is a way to protect a mother and her baby from malaria during pregnancy (sub-analysis).

Additional optional indicator: Percentage of people who are aware of the guidelines for ANC/IPTp timing and frequency

Rationale. This indicator describes the proportion of individuals (eg. women or providers) who are informed about the recommended measures for preventing malaria. SBC programs use this information to identify knowledge gaps and specific subpopulations for SBC programs to target with messages about malaria prevention.

Definition. The proportion of people surveyed who know the recommended preventive measures for malaria.

Numerator. Number of respondents who know that the primary preventive measures for malaria include using ITNs, taking preventive medication during pregnancy, taking seasonal prophylaxis, or having their house sprayed with insecticide. This list of activities may vary by country or program context.

Denominator. Number of respondents surveyed.

Measurement method. See the survey questions provided in Annex 3. These questions can be used for household surveys as well as other types of surveys and data sources (e.g., IVR, SMS). When used in qualitative research, knowledge about preventive measures can look like a discussion of what people in their community believe are the recommended preventive measures for malaria, and if those perceptions have changed since the SBC program started.

The additional optional indicators reflect sub-analyses that can be undertaken to explore specific gaps in prevention knowledge, such as IPTp, or the extent to which there are

misconceptions about nonrecommended measures, such as coils. The analysis would need to be tailored to the specific suite of prevention methods recommended for the context.

Disaggregation. Disaggregation categories can include age, sex, residence (rural/urban), geographical area (province/district or malaria endemicity), education levels, and wealth quintiles.

Data use and interpretation. Data from this indicator can inform the design and targeting of SBC programs. If the awareness of recommended measures is low or if there are widespread misconceptions about the types of recommended measures, tailored activities can be developed to improve knowledge in the population. Similarly, specific subsets of the population with such knowledge gaps can also be identified and targeted. When tracked over time, this information can be used to assess whether the population's knowledge of recommended preventive malaria measures has improved.

Strengths. This indicator provides useful formative data to determine the target audience's knowledge needs. Moreover, few questions are required to measure each knowledge indicator.

Limitations. The indicator is subject to bias/confounding with use of probing, as probing styles may not be uniform across interviewers. It is also difficult to link knowledge to any specific SBC activities without referencing actual messages.

Risk and efficacy

This indicator category addresses a population's fears and confidence. These indicators are the basis for fear-based appeals, or messages that present malaria as a threat. Research has shown that individuals can have the knowledge, skills, positive beliefs, attitudes, and intentions toward a specific behavior, yet they may still avoid engaging in the recommended behavior. Thus, a trigger to motivate action is needed. Research has shown that perceived threat is a powerful trigger to action (Witte, 1992).

However, too much fear-based messaging can paralyze people, stopping them from taking action. They may resort to fatalism or attempt to manage their fear in less productive ways, such as through denial. Fear appeals can be balanced by messages that emphasize people's ability to take effective action (perceived self-efficacy) and the perception that the action will be effective at reducing risk (perceived response efficacy). Evaluators can expect desirable behavioral responses when people have strong risk perceptions coupled with strong beliefs of self-efficacy toward the recommended response. (For more information, see **Extended parallel processing model** in Annex 1.)

Percentage of people who perceive they are at risk from malaria (perceived susceptibility)

Rationale. This indicator describes how much of the target population believes that they are at risk of contracting malaria. According to the EPPM, risk perception plays an important role in behavior. When people perceive they or their loved ones are at risk and they will experience serious repercussions as a result, they are more likely to perform the desired behavior, provided the behavior is feasible and considered effective.

Definition. The proportion of people who perceive they are at risk from malaria.

Numerator. The number of people who perceive they are at risk from malaria.

Denominator. Number of respondents surveyed.

Measurement method. Perceived susceptibility is measured through several questions. A mean score is calculated for each respondent, and respondents with a mean score greater than zero are considered to have perceived susceptibility. Then the number of the respondents with perceived susceptibility is compared with the total number of respondents to derive the indicator. More details can be found in the survey questions and scoring instructions provided in Annex 3. These questions can be used for household surveys as well as other types of surveys and data sources (e.g., IVR, SMS).

When used in qualitative research, understanding perceived susceptibility in a population can look like a discussion of how likely participants feel that they and their families will contract malaria, what factors increase or decrease their risk of contracting malaria, and if those perceptions have changed since the SBC program started.

Disaggregation. Disaggregation categories can include age, sex, residence (rural/urban), geographical area (province/district or malaria endemicity), education levels, and wealth quintiles.

Data use and interpretation. The results from this indicator should be examined in conjunction with the perceived severity, response efficacy, and self-efficacy indicators. This information is collected during formative research to help highlight key areas on which to focus SBC programs. Evaluators may expect undesirable behavioral responses when people have strong risk perceptions but doubt their ability to enact a recommended response, such as obtaining sulfadoxine-pyrimethamine (SP) from the clinic during an ANC visit, and/or they doubt the recommended response will work to avert the perceived threat, such as strong rumors that IRS or ITNs reduce fertility. Therefore, M&E activities must measure perceptions of efficacy when they assess perceptions of risk, so that SBC programs can devise the best ways to address the issue.

Perceived susceptibility can shift due to seasonal variations in malaria transmission. The MIS SBC module and the MBS are typically fielded during or just after the rainy season to assess how individuals perceive their susceptibility (and document their behavior) when actual risk is highest. Some questions describe potential seasonal variation by asking about perceived risk of contracting malaria during each season. This information is then used to inform SBC messaging for different times of the year, particularly to promote year-round

prevention behaviors.

Information on perceived susceptibility can also be used during M&E to ascertain whether the target population has been convinced that they are at risk of contracting malaria.

Strengths. Like intelligence, perceived susceptibility is a latent construct, a phenomenon that cannot be directly observed or measured but is assumed to exist based on observable behaviors or responses. This indicator uses several questions called a scale to measure different aspects of this perception.

Scales are typically used to measure a perception that may have multiple dimensions and therefore cannot be measured through one question alone. Scales are widely used in social psychology and health behavior research because they lead to more accurate research findings (Boateng et al., 2018). Some of the questions provided use reverse-coded items; their inclusion reduces bias by preventing respondents from falling into a response pattern.

Limitations. Inserting several perceived susceptibility questions into surveys or data collection activities that do not have SBC as a primary focus (such as a post-ITN distribution survey) may be challenging for reasons such as length and cost. The use of scales may not be very familiar to stakeholders and data analysts, and they may require some orientation to feel comfortable with this approach. Similarly, the use of reverse-coded items may pose challenges during data analysis. Analysis plans should be clear as to which questions are to be reverse-coded and how the results are to be interpreted.

Another limitation is that participants in surveys or interviews may provide answers they believe are socially desirable, which can lead to an overestimation of perceived severity.

Percentage of people who feel that the consequences of malaria are serious (perceived severity)

Rationale. The purpose of this indicator is to discover how much of the target population believes that the consequences of malaria are serious. According to the EPPM, perceived severity is crucial to galvanizing action. When people perceive that the threat is high and that they or their loved ones are at risk, they are more likely to perform the behavior, as long as the behavior is feasible and considered effective.

Definition. The proportion of people who perceive the consequences of malaria are serious.

Numerator. Number of respondents who perceive the consequences of malaria are serious (people with a mean score greater than zero).

Denominator. Number of respondents surveyed.

Measurement method. Perceived severity is measured through several questions. A mean score is calculated for each respondent, and respondents with a mean score greater than zero are considered to have perceived severity. Then, the number of the respondents with perceived severity is compared with the total number of respondents to derive the indicator. More details can be found in the survey questions and scoring instructions provided in Annex 3. These questions can be used for household surveys as well as other types of surveys and data sources (e.g., IVR, SMS).

When used in qualitative research, understanding perceived severity in a population can look like a discussion of what respondents think happens to people with malaria, how gravely they depict those consequences, and whether those perceptions have changed since the SBC program started.

Disaggregation. Disaggregation categories can include age, sex, residence (rural/urban), geographical area (province/district or malaria endemicity), education levels, and wealth quintiles.

Data use and interpretation. The results from this indicator should be examined in conjunction with the perceived susceptibility, response efficacy, and self-efficacy indicators. This information is collected during formative research to help highlight key areas on which to focus SBC programs. Evaluators may expect undesirable behavioral responses when people have strong risk perceptions but doubt their ability to enact a recommended response, such as obtaining SP from the clinic during an ANC visit, and/or they doubt the recommended response will work to avert the perceived threat, such as strong rumors that IRS or ITNs reduce fertility. Therefore, M&E activities must measure perceptions of efficacy when they assess perceptions of risk, so that SBC programs can devise the best ways to address the issue.

Information on perceived severity can also be used during M&E to ascertain whether the target population has been convinced that malaria can have serious consequences.

Strengths. Like perceived susceptibility, perceived severity is a latent construct, a phenomenon that cannot be directly observed or measured but is assumed to exist based on observable behaviors or responses. This indicator uses several questions, called a scale, to measure different aspects of this perception.

Scales are typically used to measure a perception that may have multiple dimensions and therefore cannot be measured through one question alone. Scales are widely used in social psychology and health behavior research because they lead to more accurate research findings (Boateng et al., 2018). Some of the questions provided use reverse-coded items; their inclusion reduces bias by preventing respondents from falling into a response pattern.

Limitations. Inserting several perceived severity questions into surveys or data collection activities that do not have SBC as a primary focus (such as a post-ITN distribution survey) may be challenging for reasons such as length and cost. The use of scales may not be very familiar to stakeholders and data analysts, and they may require some orientation to feel comfortable with this approach. Similarly, the use of reverse-coded items may pose challenges during data analysis. Analysis plans should be clear as to which questions are to be reverse-coded and how the results are to be interpreted.

Another limitation is that participants in surveys or interviews may provide answers they believe are socially desirable, which can lead to an overestimation of perceived severity.

Percentage of people who believe that the recommended practice or product will reduce their risk (perceived response efficacy)

Rationale. This indicator measures response efficacy—the belief that an activity or solution will control the threat. Before behavior change can occur, people must first be knowledgeable about the change that needs to happen and believe that they will personally benefit from adopting the behavior.

Definition. This indicator is defined as the proportion of the target population surveyed who believe that the recommended practice or product will reduce their personal risk for adverse health outcomes.

The indicators for self-efficacy, response efficacy, norms, and attitudes use generic phrasing such as "behavior/practice or product." These phrases should be revised to match the behavior of interest.

"Practice" refers to the desired behavior the program is trying to promote among members of the target population, such as sleeping under an ITN, or attending ANC. Examples of recommended "products"—which accompany recommended practices—include SP for IPTp during pregnancy, ACTs for treating malaria, RDTs, or ITNs.

Numerator. Number of respondents who believe a behavior or practice will reduce their risk of malaria.

Denominator. Total number of respondents surveyed.

Measurement method. The questions for self-efficacy, response efficacy, attitudes, and norms use generic phrasing such as "practice or product." These phrases should be revised to match the behavior of interest. Each behavior of interest should have its own set of response efficacy questions, and consequently, its own response efficacy score. When more than one behavior is assessed, a global self-efficacy score can be calculated.

Perceived response efficacy is measured through several questions. A mean score is calculated for each respondent, and respondents with a mean score greater than zero are considered to have perceived response efficacy. Then the number of the respondents with perceived response efficacy is compared with the total number of respondents to derive the indicator. More details can be found in the survey questions and scoring instructions provided in Annex 3. These questions can be used for household surveys as well as other types of surveys and data sources (e.g., IVR, SMS).

When used in qualitative research, understanding perceived response efficacy in a population can look like a discussion of what respondents think of specific malaria programs, how effective they think they are, and whether those perceptions have changed since the SBC program started.

Disaggregation. This indicator can be disaggregated by various characteristics to provide information about the population's perceptions about certain products and practices. It may be useful to disaggregate the information by a number of categories, including age, sex, residence (rural/urban), profession, education levels, and wealth quintiles.

Data use and interpretation. Results from this indicator provide information that can be used for the development of SBC programs. If people do not believe a practice or product will reduce their risk, they will be unlikely to use it consistently. Malaria behaviors with low perceived response efficacy can be prioritized in SBC programs. Information on perceived response efficacy can also be used during M&E to ascertain whether the target population has been convinced that a certain practice or product will reduce their risk.

Data on response-efficacy that is specific to a behavior is more useful for informing SBC programs than a global score for all behaviors. A global response-efficacy score would mainly be useful for tracking trends in general malaria perceptions over time; whereas, behavior-specific response-efficacy data is more easily translated into messages and approaches.

Strengths. Like perceived susceptibility, perceived response efficacy is a latent construct, a phenomenon that cannot be directly observed or measured but is assumed to exist based on observable behaviors or responses. This indicator uses several questions, called a scale, to measure different aspects of this perception.

Scales are typically used to measure a perception that may have multiple dimensions and therefore cannot be measured through one question alone. Scales are widely used in social psychology and health behavior research because they lead to more accurate research findings (Boateng et al., 2018). Some of the questions provided use reverse-coded items; their inclusion reduces bias by preventing respondents from falling into a response pattern.

Limitations. Inserting several response efficacy questions into surveys or data collection activities that do not have SBC as a primary focus (such as a post-ITN distribution survey) may be challenging for reasons such as length and cost. The use of scales may not be very familiar to stakeholders and data analysts, and they may require some orientation to feel comfortable with this approach. Similarly, the use of reverse-coded items may pose challenges during data analysis. Analysis plans should be clear as to which questions are to be reverse-coded and how the results are to be interpreted.

Another limitation is that participants in surveys or interviews may provide answers they believe are socially desirable, which can lead to an overestimation of perceived response efficacy.

Percentage of people who are confident in their ability to perform a specific malaria-related behavior

Rationale. The purpose of this indicator is to measure how much of the population feel that they have the ability to practice a certain malaria behavior. According to several

behavior change theories, including social cognitive theory, when people are not confident about their ability to perform a malaria-related behavior, they will be unlikely to adopt the behavior.

Definition. This indicator measures the percentage of the population who feel that they can successfully accomplish the behavior. Perceived self-efficacy is different from perceived response efficacy (above). However, these beliefs are related, since belief in the effectiveness of the action will also encourage adoption of the behavior.

The indicators for self-efficacy, response efficacy, norms, and attitudes use generic phrasing such as "behavior/practice or product." These phrases should be revised to match the behavior of interest. "Behavior" refers to the desired result the program is trying to achieve among members of the target population. Examples of behavior include sleeping under an ITN, administering SMC doses to eligible children, or starting ANC visits in the first trimester.

Numerator. Number of respondents who cite being confident in their ability to perform a specific malaria-related behavior.

Denominator. Total number of respondents surveyed.

Measurement method. The questions for self-efficacy, response efficacy, attitudes, and norms use generic phrasing such as "behavior/practice or product." These phrases should be revised to match the behavior of interest. Each behavior of interest should have its own set of self-efficacy questions, and consequently, its own self-efficacy score. When more than one behavior is assessed, a global self-efficacy score can be calculated.

Perceived self-efficacy is measured through several questions. A mean score is calculated for each respondent, and respondents with a mean score greater than zero are considered to have perceived self-efficacy. Then, the number of the respondents with perceived self-efficacy is compared with the total number of respondents to derive the indicator. More details can be found in the survey questions and scoring instructions provided in Annex 3. These questions can be used for household surveys as well as other types of surveys and data sources (e.g., IVR, SMS).

When used in qualitative research, understanding perceived self-efficacy can look like a discussion of how people feel about their ability to complete certain malaria behaviors, the factors that facilitate, or impede their ability to do so, and whether those perceptions have changed since the SBC program started.

Disaggregation. This indicator can be disaggregated by various characteristics to provide program implementers information about the population's confidence in performing malaria-related behaviors. It may be useful to disaggregate the information by a number of categories, including age, sex, residence (rural/urban), profession, education levels, and wealth quintiles.

Data use and interpretation. Information on self-efficacy can be useful for designing SBC programs (formative research) as well as during the audience M&E stages to ascertain whether the target group has grown in their confidence in performing a malaria-related behavior. Data on self-efficacy that is specific to a behavior is more useful for informing SBC programs than a global self-efficacy score for all behaviors. A global self-efficacy score would mainly be useful for tracking trends in general malaria perceptions over time; whereas, behavior-specific self-efficacy data is more easily translated into messages and approaches. SBC programs that aim to boost perceived self-efficacy do so by focusing on peoples' skills and their belief in being able to exercise those skills.

Strengths. As with the other risk and efficacy indicators, perceived self-efficacy is a latent construct, a phenomenon that cannot be directly observed or measured but is assumed to exist based on observable behaviors or responses. This indicator uses several questions, called a scale, to measure different aspects of this perception.

Scales are typically used to measure a perception that may have multiple dimensions and therefore cannot be measured through one question alone. Scales are widely used in social psychology and health behavior research because they lead to more accurate research findings (Boateng et al., 2018). Some of the questions provided use reverse-coded items; their inclusion reduces bias by preventing respondents from falling into a response pattern.

Limitations. Inserting several self-efficacy questions into surveys or data collection activities that do not have SBC as a primary focus (such as a post-ITN distribution survey) may be challenging for reasons such as length and cost. The use of scales may not be very familiar to stakeholders and data analysts, and they may require some orientation to feel comfortable with this approach. Similarly, the use of reverse-coded items may pose challenges during data analysis. Analysis plans should be clear as to which questions are to be reverse-coded and how the results are to be interpreted.

Another limitation is that participants in surveys or interviews may provide answers they believe are socially desirable, which can lead to an overestimation of perceived self-efficacy.

Norms

Social norms—beliefs around common behaviors and expected practices in a group—play a significant role in public health behaviors. Social learning theory states that people learn by observing what others do. People observe the consequences (either benefit or punishment) of others' actions, evaluate the relevance and importance of those consequences for their own lives, and then rehearse the behavior and attempt to reproduce the action themselves.

Descriptive norms: Percentage of people who believe the majority of their friends and community members currently practice the behavior

Injunctive norms: Percentage of people who believe the majority of their friends and community would approve of the behavior

Rationale. Growing evidence shows that norms are relevant to malaria-related behaviors, such as net use, net care and repair, provider adherence, care-seeking, and IPTp (Davlantes, et. al., 2019; Awantang et al., 2018; Do et al., 2018; Olapeju et al., 2020; Phok et al., 2022; Scandurra, 2014;).

Definition. *Descriptive norms* are perceptions of how prevalent or common a behavior is within one's immediate environment or community. *Injunctive norms* are the perception that one is expected to follow a given norm and expects others to follow in a given situation, irrespective of how one usually acts. Injunctive norms help an individual determine what is acceptable or unacceptable social behavior.

"Believe" is defined as what the intended respondents understand, discern, or recognize to be true based largely on personal experience or anecdotal evidence.

The indicators for self-efficacy, response efficacy, norms, and attitudes use generic phrasing such as "behavior/practice or product." These phrases should be revised to match the behavior of interest. "Behavior" refers to the desired result the program is trying to achieve among members of the target population. Examples of behavior include sleeping under an ITN, administering SMC doses to eligible children, or starting ANC visits in the first trimester.

Numerator. *Descriptive norm* is the number of respondents who believe that their friends and community members are practicing the recommended behavior. *Injunctive norm* is the number of respondents who believe the majority of their friends and community would approve of the behavior.

Denominator. The total number of respondents surveyed.

Measurement methods. Each indicator is measured through one question. Each behavior of interest should have its own norm question.

More details can be found in the survey questions and scoring instructions provided in Annex 3. These questions can be used for household surveys as well as other types of surveys and data sources (e.g., IVR, SMS).

When used in qualitative research, understanding norms can look like a discussion of what behaviors or actions are considered widespread or rare in respondents' context, which behaviors are considered acceptable or unacceptable, whether those perceptions have changed since the SBC program started, who is considered influential in their context, and how pressure to conform is manifested.

Disaggregation. It may be useful to disaggregate the information by a number of categories, including age, sex, residence (rural/urban), profession, education levels, and wealth quintiles.

Data use and interpretation. These indicators can be useful for formative research and M&E. When norms are low, SBC programs should frame the malaria behavior as socially desirable and commonplace to build the necessary momentum and supportive environment for change. SBC programs can influence behaviors if they portray certain behaviors as socially unacceptable or socially desirable. When norms are high, it could be posited that SBC programs are successfully building a critical mass that will eventually lead to behavior change. Monitoring can show whether the behavior is perceived as increasingly or decreasingly commonplace or acceptable, and evaluations can indicate whether SBC played a role in changing norms.

As with the other behavioral factors, this does not mean that social norms messaging/approaches should stop; rather, some social norms approaches should be continued, but the emphasis should shift to other behavioral factors. If behavioral uptake is higher than perceived norms, it might be worth informing people that their perception of the norm is at odds with actual practice.

Strengths. Just one question per behavior is required to measure each norms indicator.

Limitations. This indicator is based on personal perceptions and may not reflect the reality of community practices. As such, the data should be interpreted in the context of the questions asked and should be triangulated with other findings that relate to actual ITN use, IPTp uptake, and health-seeking behavior. Another limitation is that participants in surveys or interviews may provide answers they believe are socially desirable, which can lead to an overestimation of social norms.

Attitudes

As much as SBC practitioners take steps to avoid rumors, sometimes misconceptions and negative publicity develop and gain traction, sharply influencing the public's perception of a particular behavior and possibly exaggerating it. Evaluators must be prepared to deal with this possible outcome and swiftly and efficiently implement a way to reverse public perception and attitudes.

Percentage of people with a favorable attitude toward the product, practice, or service

Rationale. People's actions are often based on beliefs about whether a behavior will lead to positive (or desirable) or negative (or undesirable) outcomes or experiences. This indicator helps SBC programs assess the percentage of the target population who look favorably upon a malaria behavior, product, or service. According to several behavior change theories, particularly the theory of planned behavior (Annex 1), people who view a behavior or commodity favorably, such as net use or ITNs, are more likely to adopt a behavior (Fishbein & Ajzen, 1975).

Definition. "Favorable attitude" is defined as a person's positive assessment of a behavior, product, or service. Attitude is different from perceived response efficacy; perceived response efficacy is about whether the behavior is effective at reducing malaria risk. However, attitudes refer to other attributes such as attractiveness, comfort, enjoyment, and so on.

Numerator. The number of respondents with a mean attitude score greater than zero for a product, practice, or service.

Denominator. Total number of respondents surveyed.

Measurement method. The questions for self-efficacy, response efficacy, attitudes and norms use generic phrasing such as "behavior/practice or product." These phrases should be revised to match the behavior of interest.

Favorable attitudes are measured through several questions. Each behavior of interest should have its own set of attitudinal questions, and consequently, its own attitudes score. When more than one behavior is assessed, a global attitude score can be calculated.

A mean attitudes score is calculated for each respondent, and respondents with a mean score greater than zero are considered to have favorable attitudes. Then, the number of the respondents with favorable attitudes is compared with the total number of respondents to derive the indicator. More details can be found in the survey questions and scoring instructions provided in Annex 3. These questions can be used for household surveys as well as other types of surveys and data sources (e.g., IVR, SMS).

When used in qualitative research, understanding attitudes can look like a discussion of what aspects of malaria behaviors, products or services appeal or do not appeal to people, the reasons why, and whether those perceptions have changed since the SBC program started.

Disaggregation. It may be useful to disaggregate the information by a number of categories, including age, sex, residence (rural/urban), profession, education levels, and wealth quintiles.

Data use and interpretation. Information on attitudes can be useful for designing SBC programs (formative research) as well as during the audience M&E stages to ascertain whether the target group has developed more positive attitudes toward a malaria behavior, product, or service. Attitudinal data that are specific to a behavior are more useful for informing SBC programs than a global attitudinal score for all behaviors. A global score would mainly be useful for tracking trends in general malaria perceptions over time; whereas, behavior-specific attitudinal data is more easily translated into messages and approaches. When the percentage of respondents with favorable attitudes is low, SBC programs can emphasize the positive attributes (i.e., attractiveness, comfort, enjoyment, etc.) of malaria behaviors, products, or services to improve this indicator. Disaggregating results will also help direct SBC resources to populations with the most room to improve.

Strengths. This indicator can be flexible. The provided questions are broad and can be adapted to the country context. Countries can choose to use only those questions that seem relevant.

As with the risk and efficacy indicators, having favorable attitudes is a latent construct, a phenomenon that cannot be directly observed or measured but is assumed to exist based on observable behaviors or responses. This indicator uses several questions, called a scale, to measure different aspects of this perception. Scales are typically used to measure a perception that may have multiple dimensions and therefore cannot be measured through one question alone. Scales are widely used in social psychology and health behavior research because they lead to more accurate research findings (Boateng et al., 2018). Some of the questions provided use reverse-coded items; their inclusion reduces bias by preventing respondents from falling into a response pattern.

Limitations. Inserting several attitudinal questions into surveys or data collection activities that do not have SBC as a primary focus (such as a post-ITN distribution survey) may be challenging for reasons such as length and cost. The use of scales may not be very familiar to stakeholders and data analysts, and they may require some orientation to feel comfortable with this approach. Similarly, the use of reverse-coded items may pose challenges during data analysis. Analysis plans should be clear as to which questions are to be reverse-coded and how the results are to be interpreted.

Another limitation is that participants in surveys or interviews may provide answers they believe are socially desirable, which can lead to an overestimation of perceived self-efficacy.

Intention

Intention reflects an individual's readiness or willingness to engage in a particular behavior and is often a strong predictor of future actions. However, intention alone does not guarantee behavior change, as external barriers or competing priorities can intervene. Understanding intention provides SBC programs with valuable insights into whether people are motivated to act and where additional support may be needed to bridge the gap between intention and action.

Percentage of people who intend to practice the specific malaria behavior

Rationale. According to behavioral theories such as the Theory of Planned Behavior, intention is the most proximal determinant of whether an individual will engage in a particular behavior. This indicator captures the readiness or motivation to act, and posits that those who are motivated to act will be more likely to implement the behavior in question.

Definition. This indicator measures the proportion of people who express a desire, willingness, motivation, or commitment to engage in a specified malaria-related behavior in the future.

Numerator. Number of people who report intending to practice the specified malaria behavior.

Denominator. Total number of people surveyed who are eligible to practice the behavior (ex: those who had a child with fever within the past 2 weeks, those who live in areas where IRS or SMC are conducted).

Measurement method. Respondents are asked about their intention to perform the specified behavior within a relevant timeframe (e.g., attending ANC during their next pregnancy). Further details about related sub-behaviors (such as early ANC) can be asked in a more open-ended way to minimize bias (ex: at which month would you go for your first visit?).

Disaggregation. It may be useful to disaggregate the information by categories such as age, sex, residence (rural/urban), malaria endemicity, profession, education levels, and wealth quintiles.

Data use and interpretation. Information on intention can be useful for designing SBC programs (formative research) as well as during outcome monitoring to ascertain whether a greater proportion of the target population intends to practice the recommended malaria behavior. Behavioral theory suggests that when the percentage of the population that intends to practice the behavior is low, addressing factors such as knowledge, perceptions of risk, efficacy, attitudes, and norms, may increase intention. When the percentage of the population that intends to practice the behavior is high but behavioral uptake is low, external barriers such as limited access to resources, service delivery challenges, or competing priorities may be preventing people from acting on their intentions. This discrepancy can inform programmatic shifts, such as improving access to services, reducing costs, or addressing systemic obstacles.

Strengths. This indicator is based on well-established behavioral theory and is useful for informing targeted SBC activities across multiple malaria-related behaviors.

Limitations. There is often a gap between the number of people who intend to practice a behavior and those who do so (the intention-action gap). This indicator alone does not explain the cause of the gap. It is helpful to have data on the other indicators in this guide as well as information on structural conditions, the presence of environmental cues, and other factors to identify those that could impede or facilitate the translation of intention into action. Last but not least, social desirability bias may lead respondents to over-report intentions.

Credit: Jennifer Somtore, PMI Zambia

Women attending an ANC clinic at a health facility in Zambia gather for a discussion on malaria prevention in pregnancy.

Behavior indicators

Percentage of people who practice the recommended behavior

Rationale. SBC programs as well as other technical areas (e.g., vector control, case management) jointly contribute to and have a shared goal of achieving and maintaining high levels of healthy malaria behaviors among the population because these behaviors can reduce illness and save lives.

Definition. The indicator "percentage of people who practice the recommended behavior" is a generic concept reflecting the fact that behavior should be captured in the SBC program's M&E framework. Specific behavioral indicators should be used. Examples for household and provider behaviors are given on page 12.

Notes about the net use-to-access indicator. This is indicator measures net use only among those who have access to nets. It gives the estimate of the proportion of the population that used nets the night before the survey, among those people who have access to one within their household. This indicator provides information on the true behavioral gap because it accounts for the number of nets in the household. The ITN Access and Use Report website shows the use-to-access ratio across and within countries.

"ITN access" is based on the number of ITNs in the household and the number of household members. Over a large sample, it measures the proportion of people who should have access to an ITN. It cannot be calculated on an individual basis. "Use" is the proportion of the population that slept under an ITN the night before the survey.

When the use-to-access ratio is high, consider additional questions to measure the consistency of ITN use (e.g., "most nights," "every night," "during both the rainy and dry seasons," "year-round," or during each month of the year), or triangulate net use data with rainfall data and other seasonal information to understand if there is seasonal variation in net use.

Behavioral indicators for seasonal malaria chemoprevention: Guidelines for the administration of SMC vary by country, and there is no consistency yet in the behaviors measured. For example, in some places, the first dose needs to be administered by directly observed therapy; in other places, directly observed therapy is not required. Sample behavioral indicators for SMC include the percentage of children who took the first dose of SMC, for each cycle of SMC (post-cycle or post-campaign survey). Other behaviors of interest may include the percentage of children who received all doses of SMC during a given cycle. Other indicators can be found through the SMC Alliance's M&E toolkit.

Behavioral indicators for malaria vaccination: Examples of potential behavioral outcome indicators include the percentage of eligible children receiving the first malaria vaccine dose, the percentage of eligible children completing the malaria vaccine four-dose series, and the percentage of children receiving the vaccine, by dose, and so on (Promoting Demand for Malaria Vaccination: A Planning Guide).

Measurement method

Data on household behaviors are typically collected via MBS, DHS, MIS, MICS, and other community surveys. See the Resources section (under **Household surveys and data collection tools**) for detailed information on measuring these indicators, including the questions, numerators and denominators. Data on provider behaviors are collected through health facility assessments, service statistics, and supportive supervision.

Data on the prevalence of malaria behaviors are usually collected in a quantitative manner because they are key goals articulated in national malaria strategic plans. The resulting numbers can be used to monitor progress toward targets. For those who wish to measure household behaviors using qualitative methods, such approaches may be more suited for smaller target populations (e.g., to conduct self-monitoring at the individual, community, or household levels) though quantitative self-monitoring tools also work well at these levels.

Disaggregation

These indicators can be disaggregated by various characteristics to provide program implementers information about the populations' practice of targeted behaviors. It may be useful to disaggregate the information by a number of categories, including age, sex, residence (rural/urban), malaria endemicity, profession, education levels, and wealth quintiles. For providers, examples of categories for disaggregation include cadre, facility type, and geographic location.

Data use and interpretation

These indicators are useful at two main stages of the program monitoring cycle: at the formative research stage and at the audience M&E stage. In the former, these indicators can highlight a priority area or problem behavior. Low rates show that the intended audience is not engaging in adequate preventive and treatment measures. This finding is critical in designing an SBC activity. At the latter stage, these indicators offer information on the effectiveness of SBC campaigns and assess the extent to which behavior change has occurred. However, behavior change is a lengthy process, and it may take several years of program implementation before significant changes occur. For this reason, it is important to use the intermediate outcome indicators as well.

It is ideal to triangulate data sources to at least understand the gap between behavior and access. For example, the percentage of people who used a net should be compared to those with access to nets (the ITN-use-to-access ratio). Similarly, for malaria in pregnancy, the gap between service utilization (client behavior) and receipt of the service (provider behavior) could be examined. The number of women who received IPTp1 or IPTp3 could be compared with the number of women who came to ANC1 or who had at least four ANC visits, respectively. Such comparisons allow program managers to get a glimpse of the extent to which provider or health facility-side issues may impede universal receipt of IPTp among women who come for ANC.

Strengths

The questions for the measurement of these indicators are versatile. They can be added to any large nationally representative surveys or smaller surveys that are representative of a subnational area, such as a region, district, or project area. They have been used in several household surveys, and for this reason, are generally well accepted and comparisons over time are possible.

Limitations

Household behaviors

Household responses are subject to individual self-reporting. Responses may be influenced by social desirability bias (when respondents are familiar with the behavior and respond in the "correct" way instead of responding according to their true actions). This bias can be mitigated by observation in some instances (such as hanging of ITNs).

ITNs. Some ITNs in the household can be too damaged to use, therefore providing an overestimate for the denominator. ITN use may vary by season, so the timing of the data collection activity may influence this result.

Malaria in pregnancy. Not all women may know they are pregnant. Others may not wish to report if they are pregnant, particularly if the survey visit took place during early pregnancy. For this reason, it is difficult to collect data on all pregnant women in the sample. Women may not recall the name of the medication they took during pregnancy for prevention of malaria.

Care-seeking. This indicator does not explain why advice or treatment was not sought for some children. While seeking care within 24 to 48 hours is still important for preventing severe malaria, finding a consistent way to measure this has been challenging.

Testing. This indicator does not distinguish who was responsible for the outcome. It is not clear if it was because a provider offered a malaria test and/or the appropriate antimalarial, or if a client requested, accepted, or rejected them. Although completion of all doses is a common SBC objective, the behavior itself is rarely measured due to challenges with recall and social desirability bias and accessing eligible respondents in a timely manner.

SMC. These indicators do not capture information on why some targeted children did not receive SMC.

Malaria vaccine. The indicator does not capture the reasons why some eligible children did not receive the malaria vaccine. Neither does it provide insights into whether eligible children received the vaccine according to the recommended dosing schedule.

Provider behaviors

Proxy indicators for MIP and case management. These indicators do not collect data from the target audience (providers), but rather from women and caregivers who are the beneficiaries of provider behaviors. Health facility surveys are a better way to measure provider behaviors.

- **Receipt of IPTp.** This indicator does not distinguish who was responsible for the outcome. It is not clear if it was because a provider offered it, or if a client requested, accepted, or rejected it. It is not always known whether a facility had the necessary supplies to provide SP.
- **Percentage of children under five years old with fever in the last two weeks who had a finger or heel stick.** A finger or heel stick may not have been used to diagnose malaria. For instance, it can be used to diagnose anemia or typhoid. The respondent is not asked if the finger or heel stick was used to diagnose malaria because they may not know what disease was tested.
- **Treatment according to test results.** This is a measure of adherence to malaria test results. Reasons for non-adherence to negative test results, or overprescription of ACTs, are not explored.
- **Percentage receiving an ACT among children under five years old with fever in the last two weeks who received any antimalarial drugs.** This indicator is limited to children who received antimalarials. There is no information on whether the child received the correct antimalarial according to national guidelines. It simply measures whether any ACTs were given.

Enabling environment

Data on geographic access is often captured through household surveys with indicators such as percentage of the population who lives within five kilometers of a health facility (e.g., DHS, MIS, MBS). The MBS also includes questions probing for why a respondent did not seek certain services by a certain time frame or at all (e.g., early ANC, case management), and answer options include structural factors such as distance and cost. However, information on specific costs, providers' interpersonal skills, and cultural considerations would be best sourced from community members (e.g., through client exit interviews, qualitative research) and, to some extent (where included in the tools), supportive supervision.

One way to examine equity is to disaggregate and analyze data by wealth, age, gender, education, language, and other contextually relevant factors to explore the relationship between socioeconomic status and malaria service utilization. When quantitative or qualitative data on intermediate outcomes is available, profiles can be developed to describe barriers and enablers for less privileged groups (the Malaria Matchbox tool provides more resources on how to do an equity analysis for malaria).

Lastly, data regarding the availability of commodities and quality of service provision can be obtained through health facility surveys, HMIS, LMIS, supportive supervision, and administrative data from campaigns. Information on malaria policies and the quality of their implementation can be found through malaria program reviews and mid-term reviews.

Annex 3: Survey Questions, Analysis, and Presentation Methods

For information on how to use the indicators within the context of qualitative research, please see each indicator's reference sheet.

Considerations for survey design, analysis, and presentation of results

Sample size

For smaller surveys, implementers need to ensure an adequate sample size to provide enough power for disaggregated data analysis for specific target populations, such as pregnant women, if the subpopulation is targeted. A large enough sample size is needed to draw meaningful interpretations from the data, and to that end, the incorporation of these questions into existing surveys should be discussed at the earliest stages of planning so that adequate resources are allocated to that activity.

Adapting/tailoring questions

Target audiences

In general, these indicators represent the measurement of individuals, not households. Even if questions are asked as part of the household questionnaire, the responses represent only the individual providing them—not any of the other household members. If the target audience is a subsegment of the general population, such as pregnant women or children under five years of age, the survey questions must be asked of or about this specific subpopulation, for example, "Did the child under five years of age sleep under an ITN last night?"

If the intended target group is health care providers, data will have to be collected via a provider questionnaire. The questions in this annex have only been tested with households, and not with health providers. Work is ongoing to develop provider questions.

The data collection tools should be designed or modified to ensure that the correct skip patterns are in place so that people are not asked questions that do not apply to them.

"I" versus "you"

Implementers should decide ahead of time, based on the context, whether the enumerators (data collection staff) use "I" or "you" when formulating the questions. The questionnaire should be adapted accordingly; for example, "During the rainy season **I/you** worry almost every day that someone in **my/your** family will get malaria."

Local context

Data collection tools should be adapted generally for the country context. This includes the names of malaria and other medications, health structures, and SBC activities.

Social desirability bias

Social desirability bias can be a limitation to data quality if the respondents believe that enumerators wish to hear certain answers. One way to know if social desirability bias is present after data collection is by reviewing the distribution of responses to a certain question. If responses are heavily skewed in one direction, the question should be reviewed to see if it was phrased in a leading manner. The first steps to preventing social desirability bias, however, is to keep questions as neutral as possible, and to use skilled interviewers who conduct interviews in nonjudgmental ways.

Data analysis, use, and interpretation

Likert scales

The Likert scale-type questions are typically scored such that "strongly disagree" is coded as −2 and "strongly agree" is coded as +2. Questions that require an inversion (Inv) should be reverse-coded. In these instances, "strongly disagree" is coded as +2, "disagree" is coded as +1, "agree" is coded as −1, and "strongly agree" is coded as −2. Mean scores for each scale are then generated for each respondent.

While the provided questions use a 5-point scale, countries and programs can choose to use a wider range of response options, such as a 10-point scale. A wider range of response options provides a more comprehensive understanding of respondent perspectives while reducing the potential for a skewed distribution of responses, which can limit analytical power and precision of results. For example, a 10-point Likert scale could be used with a prompt such as: "I will read you a series of statements and I would like you to tell me a number between 1 and 10 that indicates how much you agree with the statement." During analysis, the midpoint of the scale is recoded as "Don't Know." Similar to above, a mean score for each scale is generated for each respondent, and respondents with a score greater than the mean are considered to have self-efficacy/response efficacy/positive attitudes/etc.

"Don't know/uncertain" is not offered as an option, but if the respondent is conflicted about an answer, this option can be used. Enumerators should be trained, however, not to mention this as an option, and only select it if the respondent does not want to answer.

Data analysts can also report the percentage of people who agree with the statement by collapsing the categories "strongly agree" and "agree" into one measure.

Analysis of "don't know" answers

The "don't know" option is not presented to respondents—enumerators can use it in the rare event that a respondent cannot categorize their answer into one of the other categories. During analysis, the "don't know" answers can be recoded as the median of the distribution (signifying neutrality) when a score is being constructed so that the number of values remains the same. Alternatively, the "don't know" answers can be dropped or recoded as missing before constructing a score.

Disaggregating results

Results on the indicators presented in this guide should be disaggregated by sex—and age, when possible—so that any differences between boys and girls or women and men can be ascertained. Other common types of disaggregation include life stages (adolescents, pregnant women, caregivers of children under five, women of reproductive age), urbanicity, geographic location, education, and socio-economic status.

Creating control groups

Evaluations should categorize individuals as exposed to or unexposed to SBC programs. These groups should then be compared, controlling for potential confounding factors. Analytical methods may include propensity score matching to create statistically matched control groups and mediation analysis, which allows researchers to test the extent to which specific changes in knowledge and attitudes can be mapped and linked to behavior change. More information can be found in Module 5 of the e-course called, "Evidence-Based Malaria Social and Behavior Change Communication: From Theory to Program Implementation."

Interpretation

Data analysts should be sure that they are drawing valid conclusions from the data. Such conclusions depend on the sampling methodology and the analytical approach taken. Bias may play a role in the results obtained. Every effort should be taken to control for bias and confounding factors.

Credit: Breakthrough ACTION-Nigeria

A health provider completes her section of the referral card from an SBC program. The referral card is used to monitor the percentage of referred clients who obtain the service.

Triangulate data sources

As noted above, these indicators have to be interpreted taking other information into account. Standing alone, the indicators may not always be able to provide answers to the questions "why?" and "so what?" By triangulating the data from these indicators with other sources, researchers are able to provide context on matters, such as access to commodities and services or information about training of staff in health facilities. This information helps provide a comprehensive narrative and explanations for the results seen.

Disaggregation

The overall sample size will also affect the conclusions that can be drawn from data. If program managers disaggregate data by too many categories, the number of observations in each category may be too small and corresponding confidence intervals will be wide.

Presenting quantities and percentages

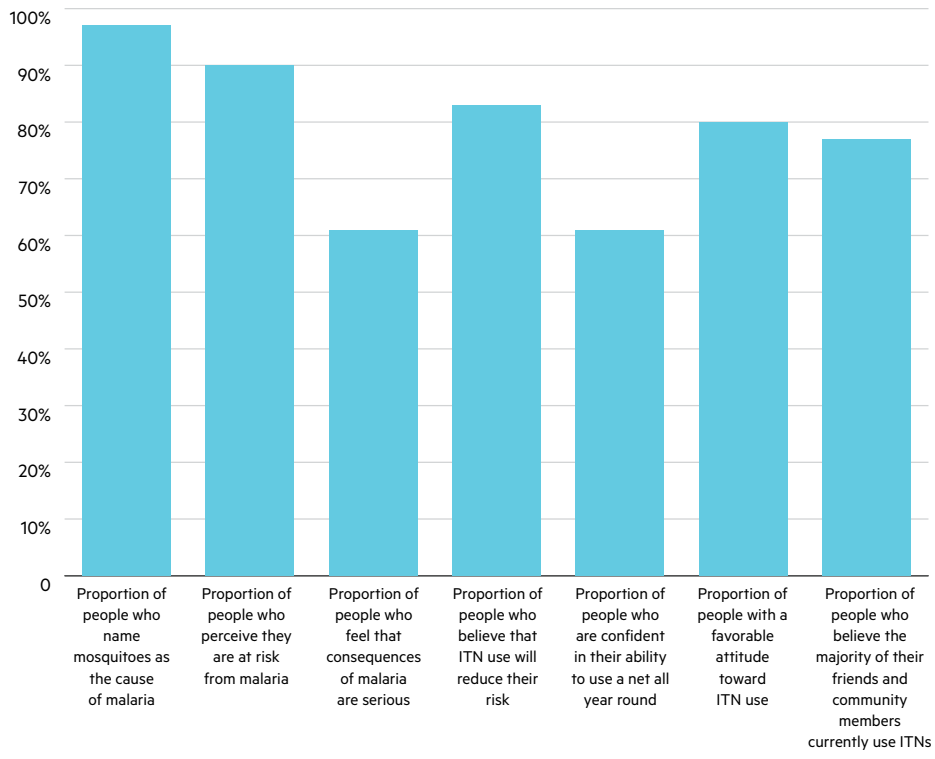
The indicators in this guide produce basic statistics that can be easily summarized in tables or simple graphs. Data for each indicator can be analyzed and presented in tables similar to those in the DHS or MIS reports (see below). Alternatively, a simple bar graph can depict the result for each indicator or question.

The structure of the graph and table would depend on the purpose of the analysis. A detailed table like the one that follows is helpful for identifying subpopulations to target, while a graph comparing all the intermediate outcome indicators is helpful for identifying which messages an SBC program should prioritize.

Proportion of people who recall hearing or seeing any malaria message within the last 6 months

Background characteristic	Women		Men	
	Recall malaria messages	Number	Recall malaria messages	Number
Age				
15-24				
15-19				
20-24				
25-29				
30-39				
40-49				
Residence				
Urban				
Rural				
Malaria Endemicity				
Highlands Eidemic				
Lake Epidemic				
Semi-Arid Seasonal				
District				
A				
B				
C				
Education				
No eduction				
Primary education				
Primary complete				
Secondary				
More than secondary				
Other relevant characteristics				

The graph below shows, for example, that awareness of mosquitos as the cause of malaria is universal and 9 in 10 individuals believe they are at risk of contracting malaria. However, there is substantial room to improve in the levels of other indicators, particularly perceived severity and perceived self-efficacy. Only 6 in 10 individuals believe that malaria can be serious and, similarly, only 6 in 10 believe they can use a net year-round.



Sample survey questions

Exposure

Percentage of people who recall hearing or seeing any malaria message within the last six months

Additional optional indicator: Percentage of people who recall hearing or seeing specific malaria messages (reported by each specific message)

Additional optional indicator: Percentage of people who recall hearing or seeing a message through communication channel "X" (reported by each specific communication channel)

The questions required for calculating these indicators are part of the standard questionnaires for the MIS and MBS. These data could also be collected in smaller subnational surveys, particularly in areas where SBC activities were targeted.

The numerator is obtained by asking the respondent[4] if they had seen or heard any messages about malaria within the past six months. In cases in which the survey is being conducted more than six months after the SBC program, the time frame can be adjusted accordingly. Implementers must note, however, that an extended time frame between the SBC program and the survey will likely introduce more recall bias into the measurement. In cases in which the SBC program has taken place within a time frame shorter than six months, the survey question can be altered accordingly.

The numerators for the additional indicators are obtained by asking follow-up questions to those respondents who replied in the affirmative that they had seen or heard a malaria message in the specified time period. The first follow-up question asks what specific messages the respondent had seen or heard, and the second question asks where the message was seen or heard. To reduce or eliminate potential response bias, the survey enumerator should avoid asking: "Did you hear/see X message?" (Yes/No).

Alternatively, depending upon the content of the communication campaign, the survey can ask the respondent to complete a catch phrase or jingle associated with the campaign. This method works well for radio, television, or even community events. For more visual campaigns using billboards, posters, or other printed materials, the enumerator can ask respondents to identify a familiar logo or image associated with a campaign. The survey can include questions on as many specific messages as are applicable. Optimally, responses will be unprompted, but the enumerator may ask a simple probe—"Is there anything else?"—to ensure the respondent has fully considered the question.

The denominator for all indicators is the total number of survey respondents. An alternative denominator for the additional indicators could be the "Number of respondents who recall hearing or seeing any malaria message," if researchers want to know what message or channel resonated most with the target population that recalls hearing or seeing any message.

Additional questions can be included in the measurement tool to provide more details and contextual information, such as:

Access to radio/television and frequency of use: Access to a radio and television are included in the MBS, MIS, and DHS, but only the MBS and DHS Women's Questionnaires include questions about the frequency of radio and television use. These two sources also include questions about mobile phone use and access.

Understanding of a specific message or jingle, such as if the message is about using ITNs, seeking prompt treatment for fever, or recognizing danger signs of malaria: This question should be asked in an open-ended, unprompted way.

The survey may also include a communication channel not used in the SBC program to gauge the extent of social desirability bias inherent in the responses. Social desirability bias occurs when the respondent tries to give the socially correct answer or one they feel will please the interviewer, rather than a true response. This check is particularly useful in an environment with relatively few communication channels.

Note: These questions are provided for reference only. As far as possible, the questions and the response options should be

4 In this document, "respondents" refers to the people selected for participation in the survey. Respondents will be selected based on the survey sampling methodology and should be representative of the target population of the malaria program. "Target population" refers to the overall entities (individuals or social groups) for whom the program or activity was intended, or the population of interest.

adapted to fit the country context with respect to recent or ongoing key messages and slogans.

Question No	Question	Responses	Code
101	In the past six months, have you seen or heard any messages about malaria?	YES	1
		NO	0
102	Where did you hear or see the messages or information? Anywhere else?	GOVERNMENT CLINIC/HOSPITAL	1
		COMMUNITY HEALTH WORKER	2
		FRIENDS/FAMILY	3
		WORKPLACE	4
		DRAMA GROUPS	5
		PEER EDUCATORS	6
		POSTER/BILLBOARDS	7
		TELEVISION	8
		RADIO	9
		NEWSPAPER	10
		SCHOOL	11
		MOSQUE	12
		COMMUNITY LEADERS	13
		SMS/CHAT/EMAIL	14
		SOCIAL MEDIA	15
		POLITICAL LEADERS	16
		OTHER (SPECIFY):	88
		DON'T KNOW	99

Question No	Question	Responses	Code
103	What messages about malaria did you hear or see? Is there anything else?	SLEEP UNDER A TREATED MOSQUITO NET	1
		EVERTYONE SHOULD SLEEP UNDER A TREATED MOSQUITO NET EVERY NIGHT	2
		PREGNANT WOMEN SHOULD GO FOR SEVERAL ANTENATAL VISITS	3
		PREGNANT WOMEN SHOULD TAKE MEDICINE TO PREVENT THEM FROM GETTING MALARIA	4
		ANYONE WITH FEVER SHOULD GO TO A HEALTH FACILITY FOR TESTING AND TREATMENT	5
		CHILDREN WITH FEVER SHOULD BE TAKEN TO THE HEALTH FACILITY WITHOUT DELAY	6
		RAPID DIAGNOSTIC TEST HELPS TO KNOW IF A FEVER IS CAUSED BY MALARIA	7
		FREE ACT TREATMENT	8
		ENSURE CHILDREN RECEIVE THE MEDICINE THAT PREVENTS MALARIA DURING THE RAINY SEASON	9
		GO TO A HEALTH FACILITY IF YOU MISS A COMMUNITY HEALTH AGENT'S VISIT TO GET THE MEDICINE THAT PREVENTS MALARIA IN CHILDREN DURING THE RAINY SEASON	10
		SLEEP UNDER A NET EVERY NIGHT TO AVOID MOSQUITO BITS	11
		HOW TO INSTALL BED NETS	12
		HOW TO WASH A BED NET	13
		HOW TO SLEEP UNDER A BED NET	14
		WHERE TO GT FREE BED NETS	15
		CHILDREN LESS THAN 5 UEARS SHOULD SLEEP UNDER A BED NET TO AVOID MOSQUITO BITES	16
		CLEAN UP SURROUNDINGS	17
		OTHER (SPECIFY):	88
		DON'T KNOW	99
104	Can you complete the following phrase: [Insert first few words of country-specific malaria SBC tagline]"	YES	1
		NO	0
		DON'T KNOW	99

Question No	Question	Responses	Code
105	Where did you hear or see this phrase?	GOVERNMENT CLINIC/HOSPITAL	1
		COMMUNITY HEALTH AGENT	2
		FRIENDS/FAMILY	3
		WORKPLACE	4
		COMMUNITY/EVENT DRAMA GROUPS	5
		PEER EDUCATORS	6
		POSTERS/BILLBOARDS	7
		TELEVISION	8
		RADIO	9
		NEWSPAPER	10
		MOSQUE/CHURCH	11
		COMMUNITY LEADERS	12
		SOCIAL MEDIA	13
		SMS/CHAT/EMAIL	14
		INTERNET	15
		OTHER (SPECIFY):	88
		DON'T KNOW	99
106	Which of these logos /pictures do you recognize? [Interviewer shows three images including the logo that has been used in the SBC activity; the other two are made up]	CAMPAIGN LOGO ONLY	1
		CAMPAIGN LOGO AND ANOTHER	2
		OTHER LOGOS ONLY	3
		DID NOT RECOGNIZE ANY LOGOS	4
107	Where did you see this image?	GOVERNMENT CLINIC/HOSPITAL	1
		COMMUNITY HEALTH AGENT	2
		FRIENDS/FAMILY	3
		WORKPLACE	4
		COMMUNITY/EVENT DRAMA GROUPS	5
		PEER EDUCATORS	6
		POSTERS/BILLBOARDS	7
		TELEVISION	8
		RADIO	9
		NEWSPAPER	10
		MOSQUE/CHURCH	11
		COMMUNITY LEADERS	12
		SOCIAL MEDIA	13
		SMS/CHAT/EMAIL	14
		INTERNET	15
		OTHER (SPECIFY):	88
		DON'T KNOW	99

Knowledge

Percentage of people who name mosquitoes as the cause of malaria

Additional optional indicator: Percentage of people who name only mosquitoes as the cause of malaria

For this indicator, "knowledge of the cause of malaria," the respondent is asked about the causes of malaria and the enumerator marks the responses mentioned. The options in the questionnaire must include mosquitoes or mosquito bites. Other options should be context-specific common misunderstandings about the cause of malaria. The respondent is counted in the numerator if they mention mosquitoes or mosquito bites as the cause of malaria.

With regard to the additional optional indicator, some analyses have shown that in some areas, respondents who believe that only mosquitoes cause malaria may be more likely to sleep under ITNs. For this indicator, respondents are counted in the numerator if they cite *only* mosquitoes as the cause of malaria—and do not cite any incorrect causes of malaria. Implementers can measure additional indicators if it is deemed useful for the program.

Question No	Question	Responses	Code
201	What do you think is the cause of malaria? Anything else? RECORD ALL MENTIONED	MOSQUITO BITES	1
		EATING DIRTY FOOD	2
		EATING UNRIPE FRUIT	3
		BEING MALNOURISHED	4
		NOT HAVING A HEALTHY DIET	5
		DRINKING DIRTY WATER	6
		DIRTY SURROUNDINGS	7
		DRINKING BEER	8
		GETTING SOAKED WITH RAIN	9
		COLD OR CHANGING WEATHER	10
		WITCHCRAFT	11
		TEETHING	12
		INDIGESTION	13
		SUN	14
		EATING OIL	15
		HEAVY WORK	16
		OTHER (SPECIFY):	88
		DON'T KNOW	99

Percentage of people who know the main symptom of malaria is fever

Additional optional indicator: Percentage of respondents who know the danger signs and symptoms of severe malaria

For the indicator, "knowledge of symptoms of malaria," the respondent is asked to name the main signs or symptoms of malaria. Responses should be unprompted/spontaneous in order to minimize bias, but the interviewer should probe respondents to ensure they have the opportunity to provide multiple responses. A typical probe would be, "Is there anything else that is a sign of malaria?" To be counted in the numerator, the respondent must identify fever among their responses.

The numerator for the additional optional indicator would be obtained by asking the respondent to name danger signs for malaria. Respondents should only be counted if they are able to name at least one clinical feature based on the WHO guidelines: impaired consciousness, prostration/extreme weakness, convulsions, respiratory distress, circulatory collapse/shock, acute kidney injury, clinical jaundice, and abnormal bleeding. Responses should be unprompted/spontaneous in order to minimize bias, but the interviewer should probe respondents to ensure they have the opportunity to provide multiple responses.

Question No	Question	Responses	Code
301	What signs or symptoms would lead you to think that a person has malaria? Anything else? RECORD ALL MENTIONED	FEVER	1
		FEELING COLD	2
		HEADACHE	3
		NAUSEA AND VOMITING	4
		DIARRHEA	5
		DIZZINESS	6
		LOSS OF APPETITE	7
		BODY ACHE OR JOINT PAIN	8
		PALE EYES	9
		SALTY TASTING PALMS	10
		FEELING WEAK	11
		REFUSING TO EAT OR DRINK	12
		OTHER (SPECIFY):	88
		DON'T KNOW	99
302	What are the main danger signs of malaria? Anything else? RECORD ALL MENTIONED	SEIZURE / CONVULSIONS	1
		FAINTING	2
		ANY FEVER	3
		HIGH FEVER	4
		STIFF NECK	5
		FEELING WEAK	6
		NOT ACTIVE	7
		CHILLS/SHIVERING	8
		NOT ABLE TO EAT	9
		VOMITING	10
		CRYING ALL THE TIME	11
		RESTLESS	12
		DIARRHOEA	13
		OTHER (SPECIFY):	88
		DON'T KNOW	99

Percentage of people who know the recommended way to diagnose malaria is with a malaria test (RDT or microscopy)

The following question can be used to assess the general population or caregivers' knowledge about malaria diagnostic guidelines. It can be adapted to providers by replacing "parents" with "providers" in a health facility assessment or another provider-facing questionnaire.

Responses such as "Take child to a health provider" may indicate awareness of the importance of professional diagnosis, but this is not a confirmation that they know the test is recommended. Other potential responses can include "look at the child's symptoms" or "physical examination" and it may be useful to see the distribution of these responses among providers. However, only those who selected "Take blood for malaria test" meet the indicator's criteria.

Responses should be unprompted/spontaneous in order to minimize bias, but the interviewer should probe respondents (e.g. "Anything else?") to ensure they have the opportunity to provide multiple responses.

Question No	Question	Responses	Code
401	What should parents do to know for sure if a child has malaria? Anything else? MULTIPLE RESPONSES POSSIBLE	TAKE CHILD TO A HEALTH PROVIDER TAKE BLOOD FOR MALARIA TEST OTHER (SPECIFY) DON'T KNOW	1 2 88 99

Percentage of people who know the treatment for malaria

For this indicator, "knowledge of treatment for malaria," the respondent is asked to name the most effective medication used to treat malaria. Responses should be unprompted/spontaneous to minimize bias. Only one response is required of the respondent. The respondent is counted in the numerator if they cite ACTs as the most effective treatment, but country-specific context should be applied to this measure. For example, a local name for ACT is an acceptable response.

Question No	Question	Responses	Code
501	What is the most effective medication used to treat malaria? RECORD ALL MENTIONED	SP/FANSIDAR CHLOROQUINE QUININE NEW MALARIA DRUG/ACT ASPIRIN, PANADOL, PARACETOMOL HERBS OR TRADITIONAL MEDICINES OTHER (SPECIFY): DON'T KNOW	1 2 3 4 5 6 88 99

Percentage of people who know the recommended prevention measures for malaria

Additional optional indicator: Percentage of people with misconceptions about effective malaria prevention practices

Additional optional indicator: Percentage of people who are aware that IPTp is a way to protect a mother and her baby from malaria during pregnancy (sub-analysis)

Additional optional indicator: Percentage of providers who know the national guidelines for IPTp dosing (timing and frequency)

For the indicator, "knowledge of preventive measures," the respondent is asked to name one or more preventive measures for malaria. The options in the questionnaire must include the relevant preventive measures implemented in the community; these may include using ITNs, taking preventive medication during pregnancy, taking seasonal prophylaxis, or having the house sprayed with insecticide. If any of these preventive measures are not implemented in the target community, such as seasonal prophylaxis, it should not be included as an option. Other options should include false preventive measures for malaria including cutting grass, keeping the house surroundings clean, and avoiding drinking dirty water. The respondent is only counted in the numerator if they name at least one of the relevant preventive interventions and none of the incorrect behaviors.

The additional optional indicator (people with misconceptions) is the inverse of knowledge of preventive measures. Respondents are included in the numerator if they cite any of the incorrect behaviors.

For the additional optional indicator "knowledge of IPTp," the numerator is the number of respondents who selected "take preventive medication" for question 601 and the denominator is the number of respondents in the sample.

Question No	Question	Responses	Code
601	How can someone protect himself or herself against malaria? Anything else? RECORD ALL MENTIONED	SLEEP UNDER A MOSQUITO NET	1
		SLEEP UNDER A INSECTICIDE-TREATED MOSQUITO NET	2
		USE MOSQUITO REPELLANT	3
		AVOID MOSQUITO BITES	4
		TAKE PREVENTIVE MEDICATION DURING PREGNANCY	5
		SPRAY HOUSE WITH INSECTICIDE	6
		USE MOSQUITO COILS	7
		CUT THE GRASS AROUND THE HOUSE	8
		FILL IN PUDDLES (STAGNANT WATER)	9
		KEEP HOUSE SURROUNDINGS CLEAN	10
		BURN LEAVES	11
		DON'T DRINK DIRTY WATER	12
		DON'T EAT BAD FOOD	13
		PUT MOSQUITO SCREENS ON THE WINDOWS	14
		DON'T GET SOAKED WITH RAIN	15
		OTHER (SPECIFY):	88
		DON'T KNOW	99

Additional optional indicator: Percentage of people who are aware of the guidelines for ANC/IPTp timing and frequency

To measure awareness among a population such as women of reproductive age, questions 601, 602, and 603 would be asked, and the numbers of women who responded correctly to each question could be calculated. Alternatively, the numbers of women who responded to correctly to ALL three questions could also be used to assess the percentage with comprehensive knowledge.

A variation for providers can be developed using questions 604, 605, and 606. The data source would be a provider survey (such as those conducted during a health facility assessment).

Question No	Question	Responses	Code
601 WOMEN	When should a pregnant woman go for antenatal care for the first time?	AS SOON AS SHE KNOWS SHE IS PREGNANT	1
		WHEN THE BABY STARTS TO MOVE	2
		IN THE FIRST TRIMESTER	3
		START OF 4TH MONTH OR 2ND TRIMESTER	4
		ANY TIME DURING PREGNANCY	5
		OTHER (specify)	88
		DON'T KNOW	99
602 WOMEN	How many times should a woman go for an antenatal visit during one pregnancy?	NUMBER OF TIMES	___ ___
		DON'T KNOW	99
603 WOMEN	How many times during her pregnancy should a woman receive medicine to keep her from getting malaria?	NUMBER OF TIMES	___ ___
		DON'T KNOW	99
604 PROVIDER	What is the name of the medicine that is given to pregnant women to keep them from getting malaria? MULTIPLE RESPONSES POSSIBLE. CIRCLE ALL RESPONSES. PROBE ONCE: ANYTHING ELSE?	FANSIDAR	1
		CHLOROQUINE	2
		METAKELFIN	3
		MEFLOQUINE	4
		ARTEMETHER/LUMEFANTRINE	5
		QUININE	6
		COARTEM	7
		HERBAL REMEDIES	8
		OTHER	88
		DON'T KNOW	99
605 PROVIDER	When should a pregnant woman start to take medicine to keep from getting malaria?	AS SOON AS SHE KNOWS SHE IS PREGNANT	1
		WHEN THE BABY FIRST MOVES	2
		AT HER FIRST ANTENATAL CARE VISIT	3
		START OF 4TH MONTH OR 2ND TRIMESTER	4
		ANY TIME DURING PREGNANCY	5
		OTHER (SPECIFY)	88
		DON'T KNOW	99

606 PROVIDER	How many doses of anti-malarial tablets should a pregnant woman take during a pregnancy to prevent her from getting malaria?	ONE TWO THREE MORE THAN THREE DON'T KNOW	1 2 3 4 99

Risk and efficacy

Percentage of people who perceive they are at risk from malaria

To calculate **perceived susceptibility**, a mean score for questions 701 to 706 is calculated for each individual. The Likert scales are converted such that "strongly disagree" is coded as +2, "somewhat disagree" is coded as +1, "somewhat agree" is coded as −1, and "strongly agree" is −2. Responses to the inverse questions (marked as "Inv") should be coded in reverse. "Don't know/ uncertain" is not offered as an option, but if the respondent is conflicted about an answer, this option can be used. Enumerators should be trained, however, to encourage respondents to choose a response within one of the other categories. Note that questions must be inverted.

Individuals with a negative mean score less than zero are categorized as having "low perceived risk," and those with a positive mean score greater than zero are categorized as having "high perceived risk." The total proportion of individuals that perceive they are at risk from malaria can then be easily obtained.

Percentage of people who feel that consequences of malaria are serious

To calculate **perceived severity**, a mean score for questions 801 to 806 is calculated for each individual (question 804 and 805 are inverted). Individuals with a positive mean score greater than zero are categorized as having "high perceived severity," and those with a negative mean score less than zero are categorized as having "low perceived severity." The total proportion of individuals that perceived malaria as serious can then be calculated.

		STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	DON'T KNOW / UNCERTAIN
SUSCEPTIBILITY						
701	Nearly every year, someone in this community gets a serious case of malaria.	1	2	3	4	99
702	When your child has a fever, you almost always worry that it might be malaria.	1	2	3	4	99
703	During the rainy season, you worry almost every day that someone in your family will get malaria.	1	2	3	4	99
704	Every month, someone in your household gets sick with malaria.	1	2	3	4	99
SEVERITY						
801	Even a healthy person can get very sick from malaria.	1	2	3	4	99
802	Getting malaria could make you very sick.	1	2	3	4	99
803	If you get malaria, it can affect your ability to work or take care of your family	1	2	3	4	99
804	Even a healthy person can get very sick from malaria	1	2	3	4	99

		STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	DON'T KNOW / UNCERTAIN
805	If not treated quickly, malaria in children could lead to death.	1	2	3	4	99

Percentage of people who believe the recommended practice or product will reduce their risk

To calculate **response efficacy**, a mean score is calculated. For this indicator, the Likert scales are converted such that "strongly disagree" is coded as −2 and "strongly agree" is coded as +2, and responses to the inverse questions (Inv) are reverse-coded. "Don't know/uncertain" is not offered as an option, but if the respondent is conflicted about an answer, this option can be used. Enumerators should be trained, however, to encourage respondents to choose a response within one of the other categories.

A mean score greater than zero for the IRS questions represents someone who perceives IRS to be protective against malaria. Similarly, a mean score greater than zero for the ITN questions signifies that a respondent feels ITNs protect them from malaria, and a mean score greater than zero for the IPTp questions indicates a belief that preventive therapy during pregnancy is effective. A mean score greater than zero for the diagnosis questions indicates that the respondent believes in the efficacy of diagnostics. Lastly, a mean score greater than zero for the treatment questions represents someone who perceives ACTs or other relevant treatment as efficacious in treating malaria.

	RESPONSE EFFICACY QUESTIONS	STRONGLY DISAGREE	SOMEWHAT DIAAGREE	SOMEWHAT AGREE	STRONGLY AGREE	DON'T KNOW/ UNCERTAIN
INDOOR RESIDUAL SPRAYING (IRS)						
901	Spraying the inside walls of a house is an effective way to prevent malaria	1	2	3	4	99
902	People who live in houses that have been sprayed are less likely to get malaria	1	2	3	4	99
ITN USE						
904	Mosquito nets protect me whether I sleep on a mat or on a bed	1	2	3	4	99
905 (Inv)	The chances of getting malaria are the same whether or not someone sleeps under a mosquito net	1	2	3	4	99
906	Sleeping under a mosquito net every night is the best way to avoid getting malaria	1	2	3	4	99
907	Mosquito nets work well to prevent mosquito bites	1	2	3	4	99
ANTENATAL CARE						
908	Consulting health providers (doctor, nurse) during the first two months of pregnancy is a good way to check if the baby and mother are healthy	1	2	3	4	99
909	It does not matter when a pregnant woman attends antenatal care for the first time	1	2	3	4	99

	RESPONSE EFFICACY QUESTIONS	STRONGLY DISAGREE	SOMEWHAT DIAAGREE	SOMEWHAT AGREE	STRONGLY AGREE	DON'T KNOW/ UNCERTAIN
INTERMITTENT PREVENTIVE TREATMENT IN PREGNANCY (IPTp)						
910	The medicine to prevent malaria during pregnancy works well to keep the mother healthy.	1	2	3	4	99
911 (Inv)	Taking the medicine to prevent malaria during pregnancy will not improve the health of the baby.	1	2	3	4	99
912 (Inv)	The chances of getting malaria during pregnancy are the same whether or not a pregnant woman takes the medicine to prevent malaria.	1	2	3	4	99
DIAGNOSIS AND TREATMENT						
913 (Inv)	Parents can diagnose malaria by their child(ren)'s symptoms just as well as a blood test for malaria	1	2	3	4	99
914 (Inv)	The malaria medicines that you buy in the market are as good as the ones distributed at the health facility	1	2	3	4	99
915 (Inv)	A person should still take malaria medicine even if the malaria test result says that the fever is not due to malaria	1	2	3	4	99
SEASONAL MALARIA CHEMOPREVENTION						
916	The SMC medicine does a good job keeping children safe from malaria.	1	2	3	4	99
917 (Inv)	The SMC medicine will not work well if my child does not take all of the doses.	1	2	3	4	99

Percentage of people who are confident in their ability to perform a specific malaria-related behavior

The Likert scales are converted such that "definitely could" is coded as +2 and "definitely could not" is coded as −2. "Don't know/uncertain" is not offered as an option, but if the respondent is conflicted about an answer, this option can be used. Enumerators should be trained, however, to encourage respondents to choose a response within one of the other categories.

For the various components of the indicator as a whole, a mean score greater than zero represents high perceived self-efficacy while a mean score less than zero represents low perceived self-efficacy.

I am going to ask you about a series of actions you could take, and I would like you to tell me how confident you are that you could actually do that action successfully. For each action, please tell me if you think you definitely could, probably could, probably could not or definitely could not do each action successfully. INTERVIEWER: DO NOT READ "DON'T KNOW" / "UNCERTAIN" RESPONSE AND ONLY USE IF RESPONDENT IS NOT ABLE TO PROVIDE ANOTHER ANSWER.

		DEFINITELY COULD NOT	PROBABLY COULD NOT	PROBABLY COULD	DEFINITELY COULD	DON'T KNOW/ UNCERTAIN
ITN USE						
1001	Sleep under a mosquito net for the entire night during the rainy season	1	2	3	4	99
1002	Sleep under a mosquito net for the entire night during the dry season	1	2	3	4	99
1003	Sleep under a mosquito net every night of the year	1	2	3	4	99
SEEK DIAGNOSIS AND TREATMENT						
1004	Find the money to take the child to the health facility quickly when your child has fever	1	2	3	4	99
1005	If you need permission, get permission from your husband or other family member to take your child to the health facility/health provider (doctor, nurse) when your child has fever	1	2	3	4	99
1006	Take your child to the health facility the same day or next day s/he develops a fever	1	2	3	4	99
1007	Request a blood test at a health facility when you think your child might have malaria	1	2	3	4	99
1008	Find the money to pay for the medicine the health provider (doctor, nurse) recommends to treat malaria	1	2	3	4	99

		DEFINITELY COULD NOT	PROBABLY COULD NOT	PROBABLY COULD	DEFINITELY COULD	DON'T KNOW/ UNCERTAIN
INTERMITTENT PREVENTIVE TREATMENT IN PREGNANCY (IPTp)						
1009	Go to antenatal care as soon as you think you might be pregnant	1	2	3	4	99
1010	Convince your spouse to accompany you for antenatal care	1	2	3	4	99
1011	Go for antenatal care even if your religious leader does not agree	1	2	3	4	99
1012	Request the medicine to prevent malaria during pregnancy when you go for antenatal care	1	2	3	4	99
1013	Take the medicine to prevent malaria during pregnancy if the health provider (doctor, nurse) offers it to you	1	2	3	4	99
1014	Ask the health provider (doctor, nurse) any questions you might have about the medicine to prevent malaria	1	2	3	4	99
INDOOR RESIDUAL SPRAYING						
1015	Move all your furniture out of my house to prepare the house for spraying	1	2	3	4	99
1016	Sleep in my house on the night it is sprayed	1	2	3	4	99
1017	Not replaster or repaint the walls after the spraying, for 6 months/one year**	1	2	3	4	99
SEASONAL MALARIA CHEMOPREVENTION						
1018	Give your child all the SMC pills left with you by the distributor.	1	2	3	4	99

*depending on the national policy
** will depend on insecticide used

Attitudes

Percentage of people with a favorable attitude toward the product, practice or service

Enumerators measure attitude by asking respondents how strongly they agree or disagree with these statements, usually in terms of the four-point (Likert-type) scale.

The statements must all correspond to the same behavior, product, or issue. Respondents express their values in terms of the expected outcome of the behavior, expected benefit or harm, or positive and negative attributes of the behavior or product.

To calculate a respondent's attitude, a mean score for the questions in this section is calculated for that respondent. The Likert scales are converted such as "strongly disagree" is coded as −2 and "strongly agree" is coded as +2. Inverted questions are reverse-coded. "Don't know/uncertain" is not offered as an option, but if the respondent is conflicted about an answer, this option can be used. Enumerators should be trained, however, not to mention this as an option, and only select it if the respondent does not want to answer. Any answer of "don't know"" is not included in the calculation of the mean.

A mean score less than zero would be categorized as having an unfavorable attitude to the product, practice, or service, and having a mean score greater than zero would be categorized as having a favorable attitude toward the product, practice, or service.

		STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	DON'T KNOW/ UNCERTAIN
INTERMITTENT PREVENTIVE TREATMENT IN PREGNANCY (IPTp)						
1101 (Inv)	A woman who has given birth before does not need to see a health provider (doctor, nurse) as soon as she thinks she might be pregnant	1	2	3	4	98
1102 (Inv)	If a pregnant woman feels healthy, she does not need to see a health provider (doctor, nurse)	1	2	3	4	99
1103	The medicine given to pregnant women to prevent malaria during pregnancy is safe for them and their babies	1	2	3	4	99
1104	The benefits of taking the medicine to prevent malaria during pregnancy are worth any discomfort the medicine might cause.	1	2	3	4	99
ITNs						
1108 (Inv)	It is not easy to sleep under a mosquito net because every night you have to unfold it and cover the sleeping space	1	2	3	4	99
1109 (Inv)	You do not like sleeping under a mosquito net when the weather is too warm	1	2	3	4	99
1110 (Inv)	Sleeping under a net is an inconvenience for a couple that wants to make children	1	2	3	4	99

		STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	DON'T KNOW/ UNCERTAIN
1111 (Inv)	The smell of the insecticide makes it uncomfortable for you to sleep under a mosquito net	1	2	3	4	99
1112	Insecticide-treated mosquito nets do not pose a risk to your health	1	2	3	4	99
1113 (Inv)	More expensive mosquito nets are more effective than cheaper or free mosquito nets	1	2	3	4	99
1114	It is easier to get a good night's sleep when you sleep under a mosquito net	1	2	3	4	99
1115	Mosquito nets are generally easy to use for sleeping	1	2	3	4	99
1116	You would use a net to sleep under regardless of its shape	1	2	3	4	99
1117	You would use a mosquito net to sleep under no matter what color it is	1	2	3	4	99
1118 (Inv)	Treated mosquito nets attract bed bugs and other insects	1	2	3	4	99
1119	You would sleep under a mosquito net regardless of the material it is made of	1	2	3	4	99
CARE-SEEKING AND TREATMENT ADHERENCE						
1120	When you think your child may have malaria, the only reliable source of care is a health worker or community health worker	1	2	3	4	99
1121 (Inv)	You prefer that your child receive the medicine to treat malaria by injection rather than swallow it by pills	1	2	3	4	99
1122 (Inv)	When your child has a fever, it is best to start by giving him/her any malaria medicine you have at home	1	2	3	4	99
1123 (Inv)	When your child has a fever, you prefer to first go somewhere to buy medicine before you take the child to see a health provider (doctor, nurse)	1	2	3	4	99
1124 (Inv)	When your child has a fever, you prefer to wait a day to see if they get better before you go to a health facility or community health worker	1	2	3	4	99

		STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	DON'T KNOW/ UNCERTAIN
1125 (Inv)	After the symptoms of malaria are gone, there is no need to continue taking the rest of the medicine doses against malaria.	1	2	3	4	99
1126	Taking all the antimalaria pills prescribed is necessary to ensure a complete recovery from malaria.	1	2	3	4	99
INDOOR RESIDUAL SPRAYING						
1127 (Inv)	Many people develop skin problems (rash, itching) after the walls inside their houses are sprayed with insecticide.	1	2	3	4	99
1128	After spraying the interior walls of a household with insecticide, a person can touch the walls safely once the spray has dried.	1	2	3	4	99
1129 (Inv)	People have problems with bugs/bed bugs after the walls are sprayed.	1	2	3	4	99
1130 (Inv)	It bothers you to leave my possessions outside of my house while my walls are being sprayed.	1	2	3	4	99
1131	Spraying the inside walls of a house to kill mosquitoes does not cause any health problems for the people living in the house.	1	2	3	4	99
1132 (Inv)	There is no need to sleep under a mosquito net once your house has been sprayed.	1	2	3	4	99
SEASONAL MALARIA CHEMOPREVENTION						
1133	Leaders in your community support the distribution of the medicine that prevents malaria in children during the rainy season.	1	2	3	4	99
1134	When children take SMC, sleeping under ITNs is no longer necessary to prevent malaria.	1	2	3	4	99
1135	Parents in your community feel they are obligated to accept the medicine that prevents malaria in children during the rainy season that is offered by the community health workers.	1	2	3	4	99
1136	Healthy children still need to take the medicine to prevent malaria in children during the rainy season.	1	2	3	4	99

		STRONGLY DISAGREE	SOMEWHAT DISAGREE	SOMEWHAT AGREE	STRONGLY AGREE	DON'T KNOW/ UNCERTAIN
1137	The medicine given to prevent malaria during the rainy season can make a child sick.	1	2	3	4	99
1138	The distributors of the medicine that prevents malaria in children during the rainy season make parents pay for the medicine .	1	2	3	4	99
1139	It is important to give your child all the doses of the medicine that prevents malaria during the rainy season left by the distributors.	1	2	3	4	99

* For contexts in which integrated community case management is being implemented, the following should also be included as an option: "The best place to seek treatment for a fever in children under five years of age is from a community health worker."

Norms

Descriptive norms: Percentage of people who believe the majority of their friends and community members currently practice the behavior

This indicator is calculated as the proportion of respondents who think that "at least half" or more (codes 1, 2, and 3) of their community practice the behavior in question. Codes 1, 2, and 3 are grouped into a single category ("at least half"). Codes 4 and 5 are grouped into another category ("less than half"). "Don't know/uncertain" is not offered as an option, but if the respondent is conflicted about an answer, this option can be used. Enumerators should be trained, however, to encourage respondents to choose a response within one of the other categories.

Question No	Question	Responses	Code
1201	Generally, among the people in your community who have mosquito nets, how many sleep under them every night?	ALL PEOPLE	1
		MOST PEOPLE	2
		MORE THAN HALF	3
		FEWER THAN HALF	4
		NO ONE	5
		DON'T KNOW	99
1202	Generally, how many women in your community go to antenatal care at least four times* when they are pregnant?	ALL WOMEN	1
		MOST WOMEN	2
		MORE THAN HALF OF THE WOMEN	3
		FEWER THAN HALF OF THE WOMEN	4
		NO ONE	5
		DON'T KNOW	99
1203	Generally, how many women in your community take medicine to prevent malaria when they are pregnant?	ALL WOMEN	1
		MOST WOMEN	2
		MORE THAN HALF OF THE WOMEN	3
		FEWER THAN HALF OF THE WOMEN	4
		NO ONE	5
		DON'T KNOW	99
1204	Generally, how many women in your community go to antenatal care within the first 3 months of pregnancy?	ALL WOMEN	1
		MOST WOMEN	2
		MORE THAN HALF OF THE WOMEN	3
		FEWER THAN HALF OF THE WOMEN	4
		NO ONE	5
		DON'T KNOW	99

Question No	Question	Responses	Code
1205	Generally, how many people in your community take their children to a health provider on the same day or day after they develop a fever?	ALL PEOPLE MOST PEOPLE MORE THAN HALF FEWER THAN HALF NO ONE DON'T KNOW	1 2 3 4 5 99
1206	Generally, how many children in your community with fever are taken to a health facility to get tested for malaria?	ALL CHILDREN MOST CHILDREN MORE THAN HALF OF THE CHILDREN FEWER THAN HALF OF THE CHILDREN NO ONE DON'T KNOW	1 2 3 4 5 99
1207	Generally, how many people in your community give their children all doses of the medicine left by the distributor?	ALL PEOPLE MOST PEOPLE MORE THAN HALF FEWER THAN HALF NO ONE DON'T KNOW	1 2 3 4 5 99
1208	How many families, generally, in your community give the medicine to other children in the householder older than 5 years?	ALL PEOPLE MOST PEOPLE MORE THAN HALF FEWER THAN HALF NO ONE DON'T KNOW	1 2 3 4 5 99

* Should be adapted based on country IPTp policy

Injunctive norms: Percentage of people who believe the majority of their friends and community would approve of the behavior

This indicator is calculated as the proportion of respondents who think that "at least half" or more (codes 1, 2, and 3) of their community practice the behavior in question. Codes 1, 2, and 3 are grouped into a single category ("at least half"). Codes 4 and 5 are grouped into another category ("less than half"). "Don't know/uncertain" is not offered as an option, but if the respondent is conflicted about an answer, this option can be used. Enumerators should be trained, however, to encourage respondents to choose a response within one of the other categories.

Question No	Question	Responses	Code
1301	Generally, among all the people in your community, how many people would criticize you if they know that you sleep under a mosquito net every night?	ALL PEOPLE	1
		MOST PEOPLE	2
		MORE THAN HALF	3
		FEWER THAN HALF	4
		NO ONE	5
		DON'T KNOW	99
1302	Generally, among all the people in your community, how many people would criticize you if they know that you go to ANC four or more times when you are pregnant?	ALL WOMEN	1
		MOST WOMEN	2
		MORE THAN HALF OF THE WOMEN	3
		FEWER THAN HALF OF THE WOMEN	4
		NO ONE	5
		DON'T KNOW	99
1303	Generally, among all the people in your community, how many people would criticize you if they know that you take a medicine to prevent malaria when you are pregnant?	ALL WOMEN	1
		MOST WOMEN	2
		MORE THAN HALF OF THE WOMEN	3
		FEWER THAN HALF OF THE WOMEN	4
		NO ONE	5
		DON'T KNOW	99
1304	Generally, among all the people in your community, how many people would criticize you if they know that you went to ANC within the first 3 months of pregnancy?	ALL WOMEN	1
		MOST WOMEN	2
		MORE THAN HALF OF THE WOMEN	3
		FEWER THAN HALF OF THE WOMEN	4
		NO ONE	5
		DON'T KNOW	99
1305	Generally, among all the people in your community, how many people would criticize you if they know that you take your children to a health provider on the same day or day after they develop a fever?	ALL WOMEN	1
		MOST WOMEN	2
		MORE THAN HALF OF THE WOMEN	3
		FEWER THAN HALF OF THE WOMEN	4
		NO ONE	5
		DON'T KNOW	99

Intention

Percentage of people who intend to practice the specific malaria behavior.

This indicator is calculated as the proportion of respondents who intend to practice a specific malaria behavior. Multiple behaviors are not combined as a person's intention to act may differ for each behavior.

Question No	Question	Responses	Code
ANTENATAL CARE AND INTERMITTENT PREVENTIVE THERAPY (IPTp)			
1401	Do you intend to have any more children?	NO YES DON'T KNOW	0 1 99
1402	If you become pregnant during the next two years, how many times do you think you would go to the health facility for antenatal care?	NUMBER OF TIMES DON'T KNOW	__ __ 99
1403	At what month in your pregnancy would you go for your first antenatal care visit?	MONTH OF PREGNANCY DON'T KNOW	__ __ 99
1404	If you become pregnant during the next two years, do you think you would take the medicine (SP/Fansidar/Maloxine/3 tablets) to prevent malaria during pregnancy?	NO YES DON'T KNOW	0 1 99
CARE-SEEKING AND TREATMENT			
1405	Imagine that one of your children under five years has fever today, how soon after you notice the fever would you take the child to seek advice or treatment for your child?	TODAY TOMORROW THE DAY AFTER TOMORROW OR LATER WILL NOT AT ALL SEEK ADVICE OR TREATMENT DON'T KNOW	1 2 3 4 99

Question No	Question	Responses	Code
1406	Where would you take the child first to seek advice or treatment?	**PUBLIC SECTOR**	
		GOVERNMENT HOSPITAL	1
		GOVERNMENT HEALTH CENTER	2
		GOVERNMENT HEALTH POST	3
		MOBILE CLINIC	4
		FIELDWORKER	5
		OTHER PUBLIC SECTOR (SPECIFY):	6
		PRIVATE MEDICAL CENTER	
		PVT HOSPITAL/CLINIC	7
		PHARMACY	8
		PVT DOCTOR	9
		MOBILE CLINIC	10
		FIELDWORKER	11
		OTHER PVT MEDICAL (SPECIFY):	12
		OTHER SOURCE	
		SHOP	13
		TRADITIONAL PRACTITIONER	14
		MARKET	15
		OTHER (SPECIFY):	88
		DON'T KNOW	99
SEASONAL MALARIA CHEMOPREVENTION			
1407	Are you planning to have your children take the medicine to prevent malaria during the next rainy season?	NO	0
		YES	1
		NO CHILD WILL BE UNDER FIVE YEARS OLD NEXT RAINY SEASON	3
		DON'T KNOW	99
INDOOR RESIDUAL SPRAYING			
1408	Are you aware of programs that spray the walls inside of a house to kill the mosquitoes that cause malaria?	NO	0
		YES	1
		DON'T KNOW	9
1409	If this program came to your community, would you be willing to allow them to spray the inside walls of your house?	NO	0
		YES	1
		DON'T KNOW	9

Question No	Question	Responses	Code
1410	The program that sprays the walls inside of a house helps to protect households from malaria by spraying the walls with insecticides. If this program came to your community, would you be willing to allow them to spray the inside walls of your house?	NO YES DON'T KNOW	0 1 9

Behaviors

Percentage of people who practice the recommended behavior

Detailed information and survey questions on measuring most of the household behavioral indicators, including the numerators and denominators, is available from Household Survey Indicators for Malaria Control or the Guide to DHS Statistics.

Some questions from the MIS, DHS, MBS, and KAP survey are provided below for reference. Questions that are not in the current DHS or MIS, but may be considered for other surveys, are starred. When countries adapt survey tools, the questions should, as far as possible, reflect national recommendations and key messages.

The ideal behavioral outcome indicators for case management and IPTp have both a household and provider component. However, there are currently no standard methods, and there is significant variation in data sources, such as HMIS and health facility surveys, and indicator definitions across countries. For the moment, we suggest that programs/evaluators use proxy indicators based on standardized and validated household survey measures—MBS, DHS, MIS, MICS, and other community surveys—provided above.

Question No	Question	Responses	Code
ITN USE			
1501	Ask the respondent to show you all the nets in the household[5] For the following questions—answer for each net	FOR EACH NET: OBSERVED NOT OBSERVED	 1 2
1502	How many months ago did your household get the mosquito net?	FOR EACH NET _ _ MONTHS _ _ YEARS NOT SURE	 1 2 99
1503	Observe or ask the brand/type of mosquito net. If brand is unknown and you cannot observe the net, show pictures of typical net types/ brands to respondent	FOR EACH NET LONG-LASTING INSECTICIDE TREATED NET • BRAND A • BRAND B • OTHER/DON'T KNOW BRAND (For the options above, skip to question 606) OTHER BRAND DON'T KNOW BRAND	 1 2 3 4 5
1504	Did anyone sleep under this mosquito net last night?	YES NO NOT SURE	1 2 99

[5]* Starred questions are not in the current standard/core DHS or MIS questionnaires. They are included here for consideration for other community surveys.

Question No	Question	Responses	Code
1505	Who slept under this mosquito net last night? RECORD THE PERSON'S NAME AND NUMBER FROM THE HOUSEHOLD SCHEDULE.	NAME LINE NUMBER	
1506	For those **children** who did not sleep under the mosquito net last night, what were the reasons for not sleeping under the mosquito net?	TOO HOT TOO COLD CHILD CRIES CHILD AFRAID NOT ENOUGH ITNs NET NOT HUNG UP USED BY ADULTS NET NOT USED WHEN TRAVELLING NET NOT IN GOOD CONDITION NET BAD FOR CHILDREN'S HEALTH NET HAS TOO MANY HOLES OTHER (SPECIFY):	1 2 3 4 5 6 7 8 9 10 11 88
1507*	For those **adults** who did not sleep under the mosquito net last night, what were the reasons for not sleeping under the mosquito net?	TOO HOT TOO COLD NET NOT HUNG UP NET NOT USED WHEN TRAVELLING NET NOT IN GOOD CONDITION NET HAS TOO MANY HOLES OTHER (SPECIFY):	1 2 3 4 5 6 88
INDOOR RESIDUAL SPRAYING			
1508*	At any time in the past 12 months, has anyone come into your dwelling to spray the interior walls against mosquitoes?6	YES NO DON'T KNOW	1 0 99
ANTENATAL CARE AND INTERMITTENT PREVENTIVE THERAPY (IPTp)			
1509	When you were pregnant with (NAME), did you see anyone for antenatal care for this pregnancy?	YES NO	1 0 (END)

[6] The time frame of 12 months for the measurement of IRS may be subject to recall bias.

Question No	Question	Responses	Code
1510	For what reason(s) did you NOT go for a checkup during your pregnancy? MULTIPLE RESPONSES POSSIBLE CIRCLE ALL RESPONSES PROBE ONCE: Anyone else?	DIDN'T HAVE TIME	1
		HEALTH FACILITY TOO FAR	2
		NO MONEY FOR TRANSPORT TO FACILITY	3
		NO MONEY FOR ANC	4
		DIDN'T THINK IT WAS NECESSARY	5
		SPOUSE DID NOT GIVE PERMISSION	6
		OTHER FAMILY MEMBER DID NOT GIVE PERMISSION	7
		NO ONE TO ACCOMPANY HER	8
		WAS NOT FEELING SICK	9
		WAS NOT HER FIRST PREGNANCY	10
		OTHER (SPECIFY)	88
		DON'T KNOW	99
1511	How many times did you receive antenatal care during this pregnancy?	NUMBER OF TIMES	__ __
		DON'T KNOW	99
1512	During which month of your pregnancy did you first go for an antenatal visit?	MONTH OF PREGNANCY	__ __
		DON'T KNOW	99
1513	For what reason(s) did you not go earlier in your pregnancy? MULTIPLE RESPONSES POSSIBLE CIRCLE ALL RESPONSES PROBE ONCE: Anyone else?	DIDN'T HAVE TIME	1
		HEALTH FACILITY TOO FAR	2
		NO MONEY FOR TRANSPORT TO FACILITY	3
		NO MONEY FOR ANC	4
		DIDN'T KNOW SHE WAS PREGNANT	5
		DIDN'T WANT OTHERS TO KNOW SHE WAS PREGNANT	6
		SPOUSE DID NOT GIVE PERMISSION	7
		OTHER FAMILY MEMBER DID NOT GIVE PERMISSION	8
		NO ONE TO ACCOMPANY HER	9
		SPOUSE WENT IN HER PLACE	10
		WAS NOT FEELING SICK	11
		WAS NOT HER FIRST PREGNANCY	12
		OTHER (SPECIFY)	83
		DON'T KNOW	99
1514	Did you receive a mosquito net at an antenatal care visit for this pregnancy?	YES	1
		NO	0
		DON'T KNOW	99
1515	During this pregnancy, did you take the medicine (SP/Fansidar/Maloxine (3 pills)) to prevent malaria during pregnancy?	YES	1
		NO	0
		DON'T KNOW	99

Question No	Question	Responses	Code
1516	Why did you not take any medicine to prevent you from getting malaria? MULTIPLE RESPONSES POSSIBLE CIRCLE ALL RESPONSES PROBE ONCE: Anything else?	NONE AVAILABLE AT HEALTH FACILITY PROVIDER DID NOT OFFER MEDICINE PROVIDER REFUSED TO GIVE MEDICINE MEDICINE WAS NOT FREE NO WATER AT FACILITY TO TAKE WITH MEDICINE NO CUP AT FACILITY TO DRINK WATER AFRAID OF EFFECTS ON MY HEALTH AFRAID OF EFFECTS ON FETUS HEALTH DID NOT GO FOR ANTENATAL CONSULTATION I DID NOT FEEL SICK WORRY I WILL FEEL SICK TO MY STOMACH OR VOMIT I TOOK IT AT HOME OTHER (SPECIFY) DON'T KNOW	A 1 2 3 4 5 6 7 8 9 10 88 99
1517	How many times did you take (SP/Fansidar/ Maloxine (3 pills)) during this pregnancy?	NUMBER OF TIMES	-- --
1518	Where did you get this medicine? **ASK ABOUT EACH SOURCE OF THE MEDICINE** MULTIPLE RESPONSES POSSIBLE CIRCLE ALL RESPONSES PROBE ONCE: Anything else?	ANTENATAL VISIT ANOTHER FACILITY VISIT PHARMACY MARKET/STORE COMMUNITY HEALTH WORKER OTHER SOURCE DONT KNOW	1 2 3 4 5 88 99
CARE-SEEKING AND TREATMENT			
1519	Has (NAME) been ill with a fever at any time in the last two weeks?	YES NO DON'T KNOW	1 0 99
1520	When "CHILD'S NAME" had the fever most recently, did you (or somebody else) seek any advice or treatment for the illness?	YES NO	1 0

Question No	Question	Responses	Code
1521	Why did you not seek any advice or treatment?	DIDN'T HAVE TIME	1
		HEALTH FACILITY TOO FAR	2
		NO MONEY FOR TRANSPORT TO FACILITY	3
		NO MONEY FOR CARE AT FACILITY	4
		DIDN'T KNOW SHOULD SEEK CARE	5
		DIDN'T WANT OTHERS TO KNOW	6
		SPOUSE DID NOT GIVE PERMISSION	7
		OTHER FAMILY MEMBER DID NOT GIVE PERMISSION	8
		NO ONE TO ACCOMPANY	9
		THE CHILD WAS NOT FEELING SICK	10
		NO MONEY FOR CARE FROM CHW	11
		OTHER (SPECIFY)	88
		DON'T KNOW	99
1522	How long after the fever started was advice or treatment sought for "CHILD'S NAME"?	SAME DAY	1
		NEXT DAY	2
		TWO OR MORE DAYS AFTER FEVER	3
		DON'T KNOW	99
1523	Where did you seek advice or treatment Anywhere else? PROBE TO IDENTIFY EACH TYPE OF SOURCE IF UNABLE TO DETERMINE IF PUBLIC OR PRIVATE SECTOR, WRITE THE NAME OF THE PLACE	**PUBLIC SECTOR**	
		GOVERNMENT HOSPITAL	1
		GOVERNMENT HEALTH CENTER	2
		GOVERNMENT HEALTH POST	3
		MOBILE CLINIC	4
		FIELDWORKER	5
		OTHER PUBLIC SECTOR (SPECIFY):	6
		PRIVATE MEDICAL CENTER	
		PVT HOSPITAL/CLINIC	7
		PHARMACY	8
		PVT DOCTOR	9
		MOBILE CLINIC	10
		FIELDWORKER	11
		OTHER PVT MEDICAL (SPECIFY):	12
		OTHER SOURCE	
		SHOP	13
		TRADITIONAL PRACTITIONER	14
		MARKET	15
		OTHER (SPECIFY):	88

Question No	Question	Responses	Code
1524	Which of the places mentioned above was advice or treatment sought first?	**PUBLIC SECTOR**	
		GOVERNMENT HOSPITAL	1
		GOVERNMENT HEALTH CENTER	2
		GOVERNMENT HEALTH POST	3
		MOBILE CLINIC	4
		FIELDWORKER	5
		OTHER PUBLIC SECTOR (SPECIFY):	6
		PRIVATE MEDICAL CENTER	
		PVT HOSPITAL/CLINIC	7
		PHARMACY	8
		PVT DOCTOR	9
		MOBILE CLINIC	10
		FIELDWORKER	11
		OTHER PVT MEDICAL (SPECIFY):	12
		OTHER SOURCE	
		SHOP	13
		TRADITIONAL PRACTITIONER	14
		MARKET	15
		OTHER (SPECIFY):	88
1525	At any time during the sickness, did your child have a drop of blood taken from his/her finger, heel or elsewhere to test if the child had malaria?	NO	0
		YES	1
		DON'T KNOW	99
1526	What was the result of the blood test?	CHILD HAD MALARIA	1
		CHILD DID NOT HAVE MALARIA	2
		DON'T KNOW/NOT TOLD	99
1527	If didn't get tested: Why did you not get testing for (NAME)?	HEALTH CENTRE TOO FAR	1
		DO NOT TRUST THE MALARIA TEST	2
		NO MALARIA TESTS AT THE HEALTH CENTRE	3
		DO NOT LIKE THE HEALTH CENTRE STAFF	4
		NO MONEY FOR TEST	5
		TEST NOT OFFERED BY THE PROVIDER	6
		DIDN'T HAVE TIME TO GET WAIT TO GET TESTED	7
		OTHER (SPECIFY):	88
		DON'T KNOW	99

Question No	Question	Responses	Code
1528	At any time during this sickness, did "CHILD'S NAME" take any medicine for the fever?	NO YES DON'T KNOW	0 1 99
1529	What medicine did he or she take? MULTIPLE RESPONSES POSSIBLE CIRCLE ALL RESPONSES PROBE ONCE: Anything else? IF THE RESPONDENT DOES NOT REMEMBER THE NAME OF THE MEDICINE GIVEN TO THE CHILD, SHOW HER THE PICTURES** OF THE LOCALLY AVAILABLE ACT, THEN ASK: Do any of the medicines on these pictures look like the medicine that your child took? If yes, show me which ones? **This question requires obtaining images of the packaging of the ACTs available in the country	SP/FANSIDAR/MALOXINE CHLOROQUINE/NIVAQUINE QUININE/ATEQUININE ACT (COARTEM, AMARTEM/ARTHEMETER-LUMEFANTRINE, COARSUCAM, CAMOSUNATE/ARTESUNATE-AMODIAQUINE, ARTEQUICK/DUOCOTEXIN/DIHYDROARTEMISININ-PIPERAQUINE, ARTEQUIN/ARTESUNATE-MEFLOQUINE) ANTIMALARIAL INJECTION OTHER INJECTION ARTESUNATE (NOT INJECTED) ASPIRIN DOLIPRANE/PARACETAMOL IBUPROFEN OTHER (SPECIFY) DON'T KNOW	1 2 3 4 5 6 7 8 9 10 88 99
SEASONAL MALARIA CHEMOPREVENTION			
1530	Have community health workers come to your household during this rainy season to distribute medicine that prevents malaria?	YES NO DON'T KNOW	1 0 99
1531	Were you present when a distributor visited your household in [MONTH OF LAST VISIT] to distribute the medicine that prevents malaria in children?	YES NO DON'T KNOW	1 0 99
1532	On the first day of the distribution, did the distributor **observe** [CHILD'S NAME] taking a dose of the medicine that prevents malaria, or did they leave the medicine with you?	OBSERVED LEFT THE MEDICINE WITH HOUSEHOLD NEITHER DON'T KNOW	1 2 3 99
1533	Did the child take the first dose of medicine that the distributors left?	YES NO DON'T KNOW	1 0 99

Question No	Question	Responses	Code
1534	What is the reason(s) the child did not receive the first dose of the medicine from the distributors? MULTIPLE RESPONSES POSSIBLE MARK ALL RESPONSES THE RESPONDENT SAYS PROBE ONCE: Anything else?	CHILD WAS NOT PRESENT WHEN THE DISTRIBUTORS CAME	1
		FORGOT TO GIVE THE MEDICINE TO THE CHILD	2
		LOST THE FIRST DOSE DISTRIBUTOR LEFT	3
		SENT CHILDREN AWAY SO THEY WOULD NOT RECEIVE THE MEDICATION	4
		NO WATER TO TAKE MEDICATION	5
		NO FOOD TO TAKE MEDICATION	6
		CHILD VOMITED TABLETS AFTER SWALLOWING THEM	7
		DIFFICULTY CRUSHING THE TABLETS	8
		CHILD FELL SICK AFTER TAKING A PREVIOUS DOSE OF THIS MEDICATION	9
		HEARD OF OR SAW BAD SECONDARY EFFECTS IN OTHER CHILDREN	10
		MEDICATION DOES NOT PREVENT MALARIA	11
		CHILD WAS NOT SICK	12
		DID NOT KNOW ENOUGH ABOUT THE MEDICATION	13
		DON'T TRUST PEOPLE WHO DISTRIBUTED THE MEDICATION	14
		PREFERRED TO SAVE THE MEDICATION FOR FUTURE ILLNES	15
		CHOSE TO GIVE THE MEDICATION TO OTHER CHILDREN AT HOME	16
		OTHER (SPECIFY)_____	88
		DON'T KNOW	99
1535	After the first dose, for how many additional days did [CHILD'S NAME] take the other doses of the medicine that the distributor left with the caregiver?	DIDN'T TAKE ANY MEDICINE AFTER THEIR VISIT	0
		1 DAY AFTER	1
		2 DAYS AFTER	2
		3 DAYS AFTER	3
		DO NOT KNOW	99

Question No	Question	Responses	Code
1536	Why didn't [CHILD'S NAME] take all the other doses of the medicine? MULTIPLE RESPONSES POSSIBLE INDICATE ALL RESPONSES PROBE ONCE: Anything else?	CHILD WAS NOT PRESENT WHEN THE DISTRIBUTORS CAME	1
		FORGOT TO GIVE THE MEDICINE TO THE CHILD	2
		LOST THE MEDICINE DOSES	3
		CHILD TOOK ALL THE OTHER DOSES IN ONE DAY	4
		NO WATER TO TAKE THE MEDICINE	5
		NO FOOD TO TAKE THE MEDICINE	6
		DID NOT HAVE TIME	7
		CHILD VOMITED UP THE PILLS AFTER SWALLOWING THEM	8
		DIFFICULTY CRUSHING THE TABLETS	9
		CHILD FELL SICK AFTER TAKING THE FIRST DOSE	10
		HEARD OR SAW BAD SECONDARY EFFECTS IN OTHER CHILDREN	11
		MEDICINE DOES NOT PREVENT MALARIA	12
		CHILD WAS NOT SICK	13
		DID NOT KNOW ENOUGH ABOUT THE MEDICINE	14
		DON'T TRUST PEOPLE WHO DISTRIBUTED THE MEDICINE	15
		PREFERRED TO SAVE THE MEDICINE FOR FUTURE ILLNESS	16
		CHOSE TO GIVE THE MEDICINE TO OTHER CHILDREN AT HOME	17
		OTHER (SPECIFY)_____	88
		DON'T KNOW	99
1537	On the second day of the distribution, did the distributor observe [CHILD'S NAME] taking a dose of the medicine that prevents malaria, or did they leave the medicine with you?	OBSERVED THE CHILD TAKING A DOSE OF THE MEDICINE	1
		LEFT THE MEDICINE	2
		NEITHER	3
		DON'T KNOW	99
1538	Did the child take the second dose of medicine that the distributors left?	NO	0
		YES	1
		DON'T KNOW	99

Question No	Question	Responses	Code
1539	What is the reason(s) the child did not receive the second dose of medicine from the distributors? MULTIPLE RESPONSES POSSIBLE MARK ALL RESPONSES THE RESPONDENT SAYS PROBE ONCE: Anything else?	CHILD WAS NOT PRESENT WHEN THE DISTRIBUTORS CAME	1
		FORGOT TO GIVE THE MEDICINE TO THE CHILD	2
		LOST THE MEDICINE DOSES	3
		CHILD TOOK ALL THE OTHER DOSES IN ONE DAY	4
		NO WATER TO TAKE THE MEDICINE	5
		NO FOOD TO TAKE THE MEDICINE	6
		DID NOT HAVE TIME	7
		CHILD VOMITED UP THE PILLS AFTER SWALLOWING THEM	8
		DIFFICULTY CRUSHING THE TABLETS	9
		CHILD FELL SICK AFTER TAKING THE FIRST DOSE	10
		HEARD OR SAW BAD SECONDARY EFFECTS IN OTHER CHILDREN	11
		MEDICINE DOES NOT PREVENT MALARIA	12
		CHILD WAS NOT SICK	13
		DID NOT KNOW ENOUGH ABOUT THE MEDICINE	14
		DON'T TRUST PEOPLE WHO DISTRIBUTED THE MEDICINE	15
		PREFERRED TO SAVE THE MEDICINE FOR FUTURE ILLNESS	16
		CHOSE TO GIVE THE MEDICINE TO OTHER CHILDREN AT HOME	17
		OTHER (SPECIFY)_____	88
		DON'T KNOW	99
1540	On the third day of the distribution, did the distributor observe [CHILD'S NAME] taking a dose of the medicine that prevents malaria, or did they leave the medicine with you?	OBSERVED THE CHILD TAKING A DOSE OF THE MEDICINE	1
		LEFT THE MEDICINE	2
		NEITHER	3
		DON'T KNOW	99
1541	Did the child take the third dose of the medicine that the distributors left?	NO	0
		YES	1
		DON'T KNOW	99

Question No	Question	Responses	Code
1542	What is the reason(s) the child did not receive the third dose of medicine from the distributors? MULTIPLE RESPONSES POSSIBLE MARK ALL RESPONSES THE RESPONDENT SAYS PROBE ONCE: Anything else?	CHILD WAS NOT PRESENT WHEN THE DISTRIBUTORS CAME	1
		FORGOT TO GIVE THE MEDICINE TO THE CHILD	2
		LOST THE MEDICINE DOSES	3
		CHILD TOOK ALL THE OTHER DOSES IN ONE DAY	4
		NO WATER TO TAKE THE MEDICINE	5
		NO FOOD TO TAKE THE MEDICINE	6
		DID NOT HAVE TIME	7
		CHILD VOMITED UP THE PILLS AFTER SWALLOWING THEM	8
		DIFFICULTY CRUSHING THE TABLETS	9
		CHILD FELL SICK AFTER TAKING THE FIRST DOSE	10
		HEARD OR SAW BAD SECONDARY EFFECTS IN OTHER CHILDREN	11
		MEDICINE DOES NOT PREVENT MALARIA	12
		CHILD WAS NOT SICK	13
		DID NOT KNOW ENOUGH ABOUT THE MEDICINE	14
		DON'T TRUST PEOPLE WHO DISTRIBUTED THE MEDICINE	15
		PREFERRED TO SAVE THE MEDICINE FOR FUTURE ILLNESS	16
		CHOSE TO GIVE THE MEDICINE TO OTHER CHILDREN AT HOME	17
		OTHER (SPECIFY)_____	88
		DON'T KNOW	99
1543	Did the medicine have any undesirable effects in this child?	NO	0
		YES	1
		DON'T KNOW	99
1544	If yes, which undesirable effects did it cause in the child? MULTIPLE RESPONSES POSSIBLE MARK ALL RESPONSES THE RESPONDENT SAYS PROBE ONCE: Anything else?	VOMITING	1
		FEVER	2
		SKIN RASH	3
		DIARRHEA	4
		STOMACH ACHE	5
		LETHARGY/FATIGUE	6
		LOSS OF APPETITE	7
		HEADACHE	8
		OTHER (SPECIFY) _____	88
		DON'T KNOW	99

Question No	Question	Responses	Code
1545	What did you do when this child had these undesirable effects? MULTIPLE RESPONSES POSSIBLE MARK ALL RESPONSES THE RESPONDENT SAYS PROBE ONCE: Anything else?	SOUGHT ADVICE OR TREATMENT FROM A HEALTH PROVIDER	1
		SOUGHT ADVICE OR TREATMENT SOMEWHERE ELSE	2
		GAVE CHILD OTHER MEDICINES	3
		TOOK CARE OF CHILD AT HOME	4
		WAITED FOR CHILD TO GET BETTER	5
		OTHER (SPECIFY)	88
		DON'T KNOW	99

Notes: The household net roster can be used to collect data for indicators measuring the use of ITNs. The household roster is applicable for all household members, pregnant women, and children under five years of age.
Presence of an ITN is typically verified at time of interview.

Resources and References

Resources

Additional Indicators

- ITN Access and Use Report
- Seasonal malaria chemoprevention
- Social change
- Community capacity
- UNICEF Standards and Indicators for Community Engagement
- ALMA Community Scorecard tools
- Malaria SBC Toolkit for CHWs
- Process and outcomes indicators related to communication for social change
- Global Fund malaria indicator guidance sheets
- Provider behavior indicators (for family planning)
- Service Provision Assessment (SPA) data collection tools
- Service Availability and Readiness Assessment (SARA) indicator reference sheets
- Measuring Equity in Social and Behavior Change Programming for Family Planning and Sexual and Reproductive Health
- Malaria Matchbox tool
- Health Equity Assessment Toolkit

Monitoring and evaluation for SBC

- SBC Learning Central (online courses, many of which include monitoring and evaluation, and some are specific to monitoring and evaluation of malaria SBC programs)
- RBM SBC Working Group: Developing M&E Plans for Malaria Social and Behavior Change Programs: A Step-by-Step Guide

Behavioral theories

- How to use a theory of change to monitor and evaluate social and behavior change programs.
- Extended Parallel Processing Model
- Theory of Planned Behavior (primer) ; tips for constructing questionnaires and developing interventions based on TPB
- Diffusion of Innovations
- Ideation
- Social Learning Theory
- Behavioral economics (concepts and case studies): visual summary/codex; more details on specific cognitive bias concepts; System 1 and 2 thinking
- Provider behavior ecosystem
- Malaria service ecosystem

Household surveys and data collection tools

- Malaria Indicator Survey Optional SBC Module
- Standard Malaria Indicator Survey questionnaires and indicator definitions
- Malaria Behavior Survey questionnaires and reports; SBC indicator dashboard with results from multiple countries.
- ITN use-to-access report
- Multiple Indicator Cluster Survey
- Guide to DHS Statistics
- Examining Malaria Service Delivery Assessment Tool
- LLIN Durability Monitoring
- Malaria vaccination questionnaires for health facility assessments, caregivers and supportive supervision

Data analysis

- Analyzing Likert scale data
- Propensity score matching

References

Awantang, G. N., Babalola, S. O., Koenker, H., Fox, K. A., Toso, M., & Lewicky, N. (2018). Malaria-related ideational factors and other

correlates associated with intermittent preventive treatment among pregnant women in Madagascar. *Malaria Journal, 17*(1), Article 176.

Babalola, S., Kumoji, K., Awantang, G. N., Oyenubi, O. A., Toso, M., Tsang, S., Bleu, T., Achu, D., Hedge, J., Schnabel, D. C., Cash, S., Van Lith, L. M., McCartney-Melstad, A. C., Nkomou, Y., Dosso, A., Lahai, W., & Hunter, G. C. (2022). Ideational factors associated with consistent use of insecticide-treated nets: A multi-country, multilevel analysis. *Malaria Journal*, *21*(1), Article 374.

Bandura, A. (2004). Health promotion by social cognitive means. *Health Education Behavior, 31*(2), 143–164.

Boateng, G. O., Neilands, T. B., Frongillo, E. A., Melgar-Quiñonez, H. R., & Young, S. L. (2018). Best practices for developing and validating scales for health, social, and behavioral research: A primer. *Frontiers in Public Health*, *6*, Article 149. https://doi.org/10.3389/fpubh.2018.00149

Burchett, H. E. D., Leurent, B., Baiden, F., Baltzell, K., Björkman, A., Bruxvoort, K., Clarke, S., DiLiberto, D., Elfving, K., Goodman, C., Hopkins, H., Lal, S., Liverani, M., Magnussen, P., Mårtensson, A., Mbacham, W., Mbonye, A., Onwujekwe, O., Roth Allen, D., … Chandler, C. I. (2017). Improving prescribing practices with rapid diagnostic tests (RDTs): Synthesis of 10 studies to explore reasons for variation in malaria RDT uptake and adherence. *BMJ Open, 7*, Article e012973. https://doi.org/10.1136/bmjopen-2016-012973

Breakthrough ACTION and Impact Malaria, 2020.A Blueprint for Applying Behavioral Insights to Malaria Service Delivery. Retrieved from: https://breakthroughactionandresearch.org/resource-library/malaria-blueprint

Cotterill, S., Tang, M. Y., Powell, R., Howarth, E., McGowan, L., Roberts, J., Brown, B., & Rhodes, S. (2020). Social norms interventions to change clinical behaviour in health workers: A systematic review and meta-analysis. NIHR Journals Library (Health Services and Delivery Research, No. 8.41.). https://www.ncbi.nlm.nih.gov/books/NBK563678/

Davlantes, E., Camara, A., Guilavogui, T., Fofana, A., Balde, M., Diallo, T., Bah, I., Florey, L., Sarr, A., Butts, J., Plucinski, M. (2019) Quality of malaria case management and reporting at public health facilities in six health districts in Guinea, 2018. American Journal of Tropical Medicine and Hygiene. https://doi.org/10.4269/ajtmh19-0150.

Do, M., Babalola, S., Awantang, G., Toso, M., Lewicky, N., & Tompsett, A. (2018). Associations between malaria-related ideational factors and care-seeking behavior for fever among children under five in Mali, Nigeria, and Madagascar. *PLoS One*, *13*(1), Article e0191079.

Fishbein, M., & Ajzen, I. (1975). Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research.Reading, MA: Addison-Wesley.

Ghose, T. (2013, April 2). Just a theory: 7 misused science words. *Scientific American*. https://www.scientificamerican.com/article/just-a-theory-7-misused-science-words/

Glanz, K., Rimer, B., & Viswanath, K. (2008). *Health Behavior and Health Education*. Jossey-Bass.

Haqqi, F., Acosta, A., Sridharan, S., Zimmerman, E., Ogunbi, T., Idiong, E., Inyang, U., Oyedokun-Adebagbo, F., Tchofa, J., Diallo, N., Mtiro, E., Okoronkwo, C., & Aiyenigba, B. (2002). When knowledge is not enough: Applying a behavioral design approach to improve fever case management in Nigeria. *Global Health, Science, and Practice, 10*(6), Article e2200211. https://doi.org/10.9745/GHSP-D-22-00211

Malpass, A., Hansen, N., Dentinger, C. M., Youll, S., Cotte, A., Mattern, C., & Ravaoarinosy, A. (2023). Status of malaria in pregnancy services in Madagascar 2010–2021: A scoping review. *Malaria Journal, 22*(1), Article 59. https://doi.org/10.1186/s12936-023-04497-3

McElroy K,, Bibeau, D., Steckler, A., and Glanz, K. (1988). An ecological perspective on health promotion programs. Health Education Quarterly, Winter; 15 (4):351-77. https://doi.org/10.1177/109019818801500401.

Olapeju, B., Adams, C., Hunter, G., Wilson, S., Simpson, J., Mitchum, L., Davis, T., Orkis, J., Cox, H., Trotman, N., Imhoff, H., & Storey, D. (2020). Malaria prevention and care seeking among gold miners in Guyana. *PLoS One*, *15*(12), Article e0244454.

Olapeju, B., Bride, M., Gutman, J. R., Butts, J. K., Malpass, A., McCartney-Melstad, A., Van Lith, L. M., Rodriguez, K., Youll, S., Mbeye, N., Ntoya, F., Lankhulani, S., Mpata, F., & Babalola, S. (2023). Malaria-related psychosocial factors, past antenatal care-seeking behaviors, and future antenatal care-seeking intentions by maternal age in Malawi and Democratic Republic of the Congo. *The American Journal of Tropical Medicine and Hygiene*, *109*(2), 277–283. https://doi.org/10.4269/ajtmh.23-0069

Phok, S., Tesfazghi, K., Tompsett, A., Thavrine, B., Ly, P., Hassan, S. E. D., Avrakotos, A., Malster, J., & Felker-Kantor, E. (2022). Behavioural determinants of malaria risk, prevention, and care-seeking behaviours among forest-goers in Cambodia. *Malaria Journal*, *21*(1), Article 362. https://doi.org/10.1186/s12936-022-04390-5

Russell, Cheryl L., et al. "Determinants of bed net use in Southeast Nigeria following mass distribution of LLINs: implications for social behavior change interventions." PloS one10.10 (2015): e0139447.

Scandurra, L., Acosta, A., Koenker, H., Kibuuka, D.M., & Harvey, S. (2014) . "It is about how the net looks": a qualitative study of perceptions and practices related to mosquito net care and repair in two districts in eastern Uganda. *Malaria Journal*, *13*(1), Article 504. https://doi.org/10.1186/1475-2875-13-504

Underwood, C., Boulay, M., Snetro-Plewman, G., Macwan'gi, M., Vijayaraghavan, J., Namfukwe, M., & Marsh, D. (2012). Community capacity as means to improved health practices and an end in itself: Evidence from a multi-stage study. *International Quarterly of Community Health Education, 33*(2), 105–127. https://doi.org/10.2190/IQ.33.2.b

Witte K. 1992. Putting the fear back into fear appeals: The extended parallel process model. *Communication Monographs, 59*(4), 329–349.

World Health Organization. (n.d.). Social determinants of health. https://www.who.int/health-topics/social-determinants-of-health#tab=tab_1

Zinduka! Malaria Haikubaliki ("Wake up! Malaria is Unacceptable!"). (2011). Retrieved from: https://www.comminit.com/malaria-africa/content/zinduka-malaria-haikubaliki-wake-malaria-unacceptable

RBM Partnership
To End Malaria