

Lessons Learned from MBS Implementation

Breakthrough ACTION's experience designing, planning, implementing, and reporting results of the Malaria Behavior Survey (MBS) in three countries has afforded us the opportunity to learn critical lessons that will be useful for country teams interested in MBS to consider. These lessons are summarized below.

I. Planning

Country Engagement

- Early involvement of in-country partners is the key to local buy-in and ownership. It is important to identify who the relevant government partners are and meet with them to introduce the MBS early in the planning process. The National Malaria Control Program (NMCP) is key among these partners but plans should also be made to meet with and engage other departments and parastatals within the Ministry of Health (Health Education, Social Mobilization, Disease Prevention and Control; Planning, Community Health; Monitoring and Evaluation/Statistics), as well as other donors and in-country PMI and malaria control implementing partners. When meeting with these partners (individually or in groups), it is helpful to use a formal presentation that explains the scope, unique characteristics, and benefits of the MBS. Breakthrough ACTION has developed a template with the relevant information in English and French that can be tailored to different country contexts.
- Partners often wonder if the MBS is duplicative of data from the Malaria Indicator Survey, the Demographic and Health Survey, or the Multiple Indicators Cluster Survey. To address this concern, emphasize that the MBS is based on the ideation model of behavior change, and designed to assess ideational and other factors associated with malaria-related behaviors using a standardized methodology. It is important to explain to partners how the MBS complements rather than duplicates existing national malaria surveys. In this regard, it is important to make it clear that the MBS is not a coverage survey, and describe how the MBS is different from other malaria-related surveys currently used in-country, not just in terms of survey questions but also analytically. MBS data analysis is informed by the ideation model and, at its core, involves relating behavioral outcomes to relevant ideational constructs in a multivariate logistic model. It is also essential to share examples of how the MBS can guide programmatic interventions and inform the development, as well as facilitate the execution of, a national SBC strategy across low, moderate and high transmission zones. (Work in low transmission areas is forthcoming.)
- The MBS is designed to provide data for NMCPs and partners to develop effective strategies for influencing malaria prevention and treatment behaviors. NMCPs and partners should be involved in every stage of survey design and implementation. The success of the survey and the utility of the data for strategy development and programming depends on the extent to which all technical units within the NMCP and its

partners are involved in the design and implementation process. Further, the added value of a qualitative component should be part of early planning discussions.

- Agreement between PMI and Breakthrough ACTION on the scale of the MBS, sampling design and size, and the preliminary budget should be reached prior to introducing the MBS to NMCP. This will help to manage expectations from stakeholders within the scope of available resources before reaching out to the NMCP who may, for example, desire a national level survey which may not be possible with the funding available.
- The involvement of government statistical or mapping offices (National Statistical Office, National Bureau of Statistics, National Institute of Cartography, etc.) who are responsible for the national enumeration area (EA) sampling frame and sketch maps in sampling design and implementation is recommended.
- Setting up a survey advisory group is essential and should be done early; ideally as soon as PMI and NMCP have agreed on the geographic scope (see below). The composition of the advisory group should reflect expertise in survey design, research implementation and analysis (where possible), malaria transmission, prevention and treatment, SBC and data processing. Representation of the country NMCP team and other groups with local malaria knowledge on the advisory group is critical to its relevance and effectiveness as are those partners responsible for implementing malaria SBC to ensure buy-in of the recommendations generated from the MBS. The advisory group should meet periodically and there should be a forum (e.g., through email or WhatsApp) that allows free flow of information among the members. The group should have the opportunity to provide input into the adaptation of the survey tools to the country context, survey implementation, and review of the final report. Breakthrough ACTION has developed Terms of Reference for the survey advisory group that make clear these responsibilities and can be shared with members at the outset.
- An understanding of the local IRB requirements will help to ensure that adequate time is allocated to this aspect of the process and to avoid unnecessary delays down the line. The timelines for ethical review vary a great deal by country so it is recommended to learn about the process and timelines as early as possible. The NMCP and local PMI team may also be involved in interacting with the local IRB. It is also important that Monitoring and Evaluation personnel or other people familiar with the local IRB requirements and processes are available in the country to help coordinate the local IRB submission and approval process.

Adaptation

- Standardization of survey questions across countries should be maintained to the extent possible. Minimal adaptation is possible taking into consideration the country context. However, we do not recommend picking and choosing among the battery of questions designed to measure specific constructs as these sets of questions have been validated. Tweaking questions to make them more relevant to the country context may be necessary, however, and is allowed. Additionally, not all modules are relevant to all countries. Countries may opt to include or exclude a module based on the circumstances within their country. The MBS Implementation Guidelines include a checklist of items to consider when making adaptations or proposing new questions.

- Building on the point above, for ease of cross-country comparison, it is important to retain the numbering of questions in the standard questionnaires. New questions should be sub-numbered within the relevant section to distinguish them from the core questions.
- Finalizing the data collection tool is time consuming. It is critical that both the NMCP and PMI are involved as key partners. Involving too many experts at this stage can unnecessarily lengthen the process; engaging four to six relevant experts is best. Sufficient time for tool adaptation and internal pretesting (prior to the field test) should be included. This step should not be rushed as it could impact the data collected.
- The MBS is a major research endeavor and its success depends to a great extent on the research firm hired to help with data collection. The ideal research firm should have considerable experience conducting population surveys of similar magnitude to the MBS. Furthermore, the ideal candidate should have expertise in survey field work, electronic data collection, and data processing. The firm's staff should be able to develop and data collection platforms rather than sub-contract out this work.

Cost Considerations

- Costing information of other surveys similar in size or scope can inform the potential costs of the MBS. The costs that tend to be highly variable across countries include research firm rates (including whether healthy competition of competent local firms exists which can bring down costs), transportation within the country during the rainy season, translation of the survey into multiple languages, and field office costs.
- While there may be little that can be done to control these costs, they can be taken into account when making decisions about budgeting for the MBS. Options for cost-sharing and adjusting the survey scope have direct impacts on the overall budget.
- Assuming that survey implementation will be coordinated by Breakthrough ACTION, adequate budgetary provision should be made for the Breakthrough ACTION US-based research team (the PI or lead researcher and the research assistant) to make a number of trips to the survey country. Ideally, the research team should make at least three in-country trips: one for planning, one for implementation, and one for data interpretation. Data dissemination may require an additional trip.
- In countries where the MBS is fielded as part of an existing Breakthrough ACTION buy-in, the costs associated with fielding it may be lower. Cost sharing related to the level of effort for country and headquarters staff, office costs and resources, vehicles for transport, etc. can help drive down costs. For example, Breakthrough ACTION in-country staff may already have relationships with an NMCP and meet with them regularly, and can therefore easily follow up on MBS-related items eliminating the need to hire consultants or an NGO to manage logistics and planning.
- While there may be little control over this, whether a country has an active Breakthrough ACTION buy-in should be considered when budgeting or planning for an MBS.
- Cost-sharing with other donors should also be considered.

Geographic Scope, Level of Representativeness, and Sample Size

- Sample size and geographic scope are significant drivers of total cost influencing the number of field workers required, the number of days in the field, transportation needs, and per diem and lodging costs, among other things. Unlike some of the other cost categories outlined above, this factor is within the control of the team planning the MBS.
- The geographic scope, decided by the planning team, could be designed as national or sub-national; it could also be limited to PMI-supported regions if appropriate. Limiting the geographic scope helps reduce costs.
- Sample size, on the other hand, is dependent on the level of representativeness desired. The level of representativeness is defined by the number of study zones from which the MBS will be powered to detect significant differences. While it is tempting to have multiple zones, we recommend selecting no more than four zones, and preferably two to three.
- To determine the most appropriate zones, planning teams should consider the following:
 - While zoning by endemicity in broad strokes is a valid approach for the MBS (if it can be kept within four zones), it is critical to consider zoning that will yield programmatically useful SBC data. We have learned from past MBS experiences that there are not necessarily many differences across zones, especially in countries with moderate to high transmission and countries with transmission during most of the year. Differences may, however, be pronounced in urban versus rural areas (not only the capital city, but the zone).
 - Building on the above point, matching MBS zones to a micro-stratification of endemicity zones is generally not feasible from a logistics or cost perspective. This is especially true if the endemic areas are not contiguous in the country.
 - While we have yet to conduct the MBS in countries with stark seasonality of malaria, judging from the differences in DHS and MIS data, it is likely that behaviors and their determinants in areas with highly seasonal malaria would be considerably different than areas where seasonality is less pronounced. In such countries, taking seasonality into consideration in determining appropriate zones and sampling strata is critical.
 - Conducting the MBS in the large, urbanized cities is not recommended unless malaria transmission is significant, SBC activities in the city are ongoing, and the NMCP feels strongly about including it. Excluding large, urbanized cities can help reduce the costs of the MBS at little expense to SBC programming.
 - Within low transmission settings, an adapted MBS using more appropriate sampling methodologies (e.g., respondent-driven sampling, snowball sampling, time-location sampling) may be considered to reduce cost.
- If an MBS is not possible on a national scale given budget constraints, a smaller sample size will still, nonetheless, produce a great deal of learning about the situation in the country and tell a compelling story. There are compromises, however, to be taken into consideration with a smaller sample. For example, sample size may limit the ability to compare results among socio-demographic groups defined by a variable with multiple

values or perform multivariable logistic regression with multiple predictor variables. It is important for all stakeholders to understand this in the planning stage.

- The sampling design is such that it allows for a sufficient sample to make valid inferences at the level for which representativeness is assured. However, in running logistic regressions to identify the correlates of specific behaviors, care should be taken to ensure that the number of observations is sufficient given the prevalence of the behavior and the number of relevant explanatory variables that are included in the estimated models. A key factor in the performance of logistic regression models is the ratio of the smaller of the two outcomes (e.g., doing versus not doing) to the number of regression coefficients; this is the Events Per Variable (EPV). Studies have shown that when EPV is low, logistic regression coefficients are often inaccurate and biased. Ten EPV is the recommended minimal criterion for logistic regression (Moons et al., 2014; Pavlou et al., 2016). For example, if the number of outcome events is 100, one should ideally not have more than ten binary explanatory variables. This guideline is particularly relevant for behaviors that are limited to a subset of the population (for example, care-seeking for febrile children) and should be taken into consideration when determining the required sample size for MBS.

Approaches to Cost Estimates

- USAID Missions may take several steps to facilitate budgeting and planning:
 - Define the total amount that they can spend on an MBS and ask Breakthrough ACTION to indicate what is feasible within that envelope; **or**
 - Define the geographic scope and level of representativeness and ask Breakthrough ACTION to cost it out; **or**
 - A combination of both.
- It should be noted, however, that the second option above could be costly, particularly if the geographic scope is expansive and the level of representative desired is relatively granular.
- In some countries, co-funding with other donors, such as the Global Fund, may be an option to expand the geographic scope. In the DRC, for example, the Mission shared two funding amounts to work with - one with Global Fund funding and one without. Breakthrough ACTION then calculated the size and scope feasible within each amount.
- Specific questions Missions may consider when budgeting for an MBS are:
 - What is the smallest geographic scope and zoning of interest?
 - Is there an opportunity for other donors to pitch in? If so, does the proposed timing of implementation align with all donor's needs?
 - Is the NMCP able to provide in-kind support such as space for meetings, trainings, or dissemination?
 - Is the NMCP able to provide in-kind support for transportation costs (vehicles, fuel, etc), particularly for their own staff to travel with Breakthrough ACTION during field visits?
 - Is there the possibility of receiving in-kind support from other partners or civil society organizations working in malaria SBC in the country?

II. Survey Implementation

- Electronic data collection (mobile devices or CAPI) is recommended. Developing a valid electronic data collection program is an iterative process involving close collaboration between the research firm and the survey organizers. Adequate time must be built into implementation to allow for this iterative process and ensure that an adequate data collection program is in place prior to the training of field workers or pretesting of data collection tools. Direct communication between the survey organizers and the data processing unit within the research firm is mandatory to ensure close collaboration.
- The data collection platform should allow access for researchers from the organizing agency (e.g., Breakthrough ACTION) to monitor data collection progress in real time, assess quality of data collection, and provide feedback and course correction as needed.
- Adequate field supervision is essential to ensuring the collection of high quality data. The field supervisors should have prior experience as supervisors and receive special training in the context of the survey. The research firm should put in place a quality assurance system that allows effective monitoring of fieldwork, and prompt identification and resolution of data collection issues and that researchers from the organizing agency are involved in monitoring data collection through coordinated field visits. Where the local IRB allows, representatives of the NMCP and the survey advisory group may also be involved in field visits and monitoring fieldwork, provided they receive prior training in research ethics.
- Data collection is often subject to unforeseeable field conditions including heavy rains, social unrest, political turmoil, field workers becoming incapacitated, etc. It is therefore important to build flexibility into the implementation timeline and have valid back-up plans (including substitute enumeration areas, supplemental transportation expenses, realistic field worker evacuation plans) in place.

III. Data Analysis, Reporting

- Many aspects of the analysis of MBS data (reshaping net files, reshaping household member schedules, deriving weights, access ratios, etc.) are complicated and may not be within the capacity of local vendors or government institutions to do. At this stage, extensive statistical support and oversight from seasoned researchers with SBC expertise is required. Detailed analysis templates (e.g., Stata do-files) with step by step analysis plans for guidance may be needed to transition this activity to local analysts in the future. In this case, we recommend that Breakthrough ACTION researchers continue to provide statistical support and oversight.
- A data interpretation workshop that allows the key end-users of the data (NMCP and its implementing partners; other donors; civil society) to review the data and provide input into elucidating the findings is critical to ensure contextual relevance, facilitate acceptance and local ownership of the data, and motivate use of the results in their programming. Experience has shown that a two to three-day data interpretation workshop with participation from the NMCP, PMI, and other agencies involved in malaria control in the country fosters local ownership of data, positively impacts the quality of the survey report, and allows for discussion related to application of the data. It is also a

concrete capacity building opportunity for in-country partners to build their skills in both analyzing and interpreting the data. When done, it was appreciated, fostered greater understanding and encouraged stakeholders to reference the findings more often. It is ideal to invite the NMCP to co-facilitate during this workshop where possible.

Use for Programmatic Decision Making

- Understanding the data and its implications does not always go hand in hand, especially to those not working in SBC or who are not well versed in the value of multivariable regression analysis. It is important, therefore, to take the time to interpret the data and think through, with all in-country partners, how to most strategically apply learning from the MBS to programmatic decision making.
- When taken as an entire report, it can be intimidating to try to distill all of the information. The MBS Results Brief, therefore, brings together all of the main (and strongest) behavioural determinants findings into one short document. When possible the MBS Results Brief should be the primary source of information, with the report serving as a back up when building consensus around prioritizing resources and activities.
- Results should be used in reviewing the current national SBC/C strategies to determine:
 - Priority and secondary audiences
 - Main ideational determinants for behaviours per thematic area
 - Suggested messages per thematic area
 - Best channels/times to reach specific audiences
 - Successes from the previous strategy and areas for improvement
 - Prioritization of activities given the deeper understanding of behavioural determinants in the evolving epidemiological and funding environment

References

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