

When Knowing the Protocol is Not Enough

Behavioral Design for Provider Behavior Change in Malaria Diagnosis and Treatment in Nigeria

Behavioral design is an approach that leverages insights from behavioral economics, social psychology, human centered design, and other disciplines to develop and test innovative solutions that reshape people's environment to positively influence their behavior.

As part of Breakthrough ACTION, ideas42 employs a four-stage behavioral design methodology which consists of (i) defining a problem in terms of a behavior we seek to encourage, (ii) diagnosing the behavioral drivers of that problem, (iii) designing solutions that address the behavioral drivers, and (iv) testing the effectiveness of solutions and adapting as needed. This approach is one way to design interventions to change health-related behaviors and decision-making, grounded in an understanding of why people choose as they do and what motivates their decision-making and action. This brief will describe the application of this approach to a provider behavior change activity in Nigeria.

Provider Behavior and Malaria in Nigeria

In 2011, the Nigeria Federal Ministry of Health changed its national guidelines for malaria diagnosis and treatment to align with the World Health Organization, requiring rapid diagnostic testing (RDT) or microscopy to confirm a malaria diagnosis before treatment.¹ However, in spite of these new national guidelines, use of RDT remains low.^{2,3}

In addition to low RDT use for diagnosis, studies suggest that providers do not adhere to treatment guidelines in the provision of artemisinin-based combination therapy (ACT) for positive RDT.^{4,5}

The project applied a behavioral design approach to better understand how features of providers' environment and experiences shape their compliance with malaria testing and treatment guidelines.

Defining the Problem

In the define phase, the project conducted formative research to systematically define a behavioral problem, drawing from existing survey data, observation of activities in health facilities, and interviews with clients and providers. Based on the formative research, Breakthrough ACTION identified a behavioral problem for which behavioral design held promise as an approach to develop effective solutions:

*Providers do not base the treatment of suspected malaria cases on malaria parasite test results.
We want providers to base the treatment of their patients on the outcome of malaria parasite tests.*



USAID
FROM THE AMERICAN PEOPLE



The formative research found that:

- While providers generally understand the need to conduct malaria testing in all fever cases, there are instances in which the providers do not always administer the test.
- Providers report administering ACTs when a client's symptoms suggest malaria, even if malaria test results are negative or the client is not tested for malaria.
- Failure to prescribe ACTs in the case of a positive malaria test result is not a common practice.

This formative research suggested that the desired provider behaviors—testing and treatment—are related and have similar drivers; therefore, a behaviorally-designed intervention could have a meaningful impact on both. Providers are likely to neglect testing if they have no intention of using test results to inform their treatment decisions, and providers who neglect to test their clients will be limited to treating their clients without test results.

Diagnosis

Having defined the problem, the team generated hypotheses about potential behavioral barriers contributing to the problem of non-compliance of testing and treatment protocol. These barriers were then investigated through interviews with clients and providers and structured observations of interactions in the health facilities. Below are the findings from the diagnosis phase.

DIAGNOSIS #1: Providers have to consult with large numbers of clients, diminishing the quality of their consultations. The logistics involved dissuade some providers from testing clients for malaria.

High client volume leads providers to experience time **scarcity**. As a result, they **tunnel** on the urgent demands of seeing as many clients as possible, which may lead them to neglect protocol during consultations.

Time scarcity is compounded by minor inconveniences or obstacles in the client flow process, and in particular the fact that providers see clients before and after testing. These hassles could lead a well-meaning provider to choose not to test for malaria or not to treat according to test results. Providers who perceive malaria parasite testing as too burdensome or time consuming may instead **satisfice** in some cases and decide clinical assessment alone is sufficient for diagnosis.

Furthermore, providers perceive pressure from clients to leave the facility with malaria treatment. Providers express beliefs that clients seek professional health care only when severely ill, which increases the pressure they feel to treat their clients quickly. Providers show a strong **aversion to risk** and are particularly attuned to the potential consequences of a missed malaria diagnosis.



BEHAVIORAL DESIGN CONCEPTS

Scarcity: a context of not having enough of a key resource, including time, which negatively impacts cognition, decision making, and self-control

Tunneling: Intently focused on the most urgent or immediate needs in situations of scarcity, even if they are not the most important

Satisficing: a decision-making strategy whereby a selection is considered “good enough” under the circumstances and when more effort would be required to achieve a “best possible” outcome

Risk aversion: a preference for avoiding uncertainty and favoring options that are more certain, even when their expected result is worse, on average

DIAGNOSIS #2: Providers think malaria test results are not reliable, which may discourage them from both testing and adhering to test results in their treatment recommendations.

Providers express distrust of RDTs and believe that the likelihood of inaccurate test results is very high. Interviews with providers suggest that these perceptions may be rooted in the fact that early RDTs were far less sensitive to malaria than those currently used, the inability of RDTs to detect different strains of malaria, or concerns about the test kits being old or past their expiration date.

Providers' interpretation of RDT results is also prone to **base rate neglect**; as malaria is endemic in the region, providers focus on the many cases of malaria around them, overlooking the fact that RDTs have a very small probability of presenting false negative results. Instead, providers treat suspected malaria cases with **confirmation bias**, interpreting symptoms in ways that support their prior expectations of a positive malaria diagnosis.



BEHAVIORAL DESIGN CONCEPTS

Base rate neglect: the tendency to place more emphasis on event- or situation-specific information, than on probability

Confirmation bias: seeking or interpreting evidence in ways that are partial to existing beliefs or expectations

DIAGNOSIS #3: Providers have strong identities as clinical experts and are less sure of guidelines when test results contradict their clinical assessment.

Providers described an approach to testing that suggests they hold a **mental model** in which RDTs are considered confirmation of clinical examinations rather than a diagnostic tool.

Providers' descriptions of the relative accuracy of their clinical assessments and RDTs suggest that they may be overconfident in their ability to accurately identify malaria in clients without reviewing test results. In addition, providers' stated opinions about RDTs suggest that they may experience **status quo bias**, finding it difficult to change their usual, practiced approach to malaria case management in accordance with new guidelines. This is more prevalent amongst more experienced providers, those who received job training from senior colleagues, and in secondary health centers where providers have received more specialized training.



BEHAVIORAL DESIGN CONCEPTS

Mental model: cognitive structures of organized prior knowledge that are developed from experience

Status quo bias: a preference for maintaining the current state of affairs

Diagnosis to Design

Based on the diagnosis findings, five different solutions were created. Each solution is described in detail below:

Testing before consultation

The solution changes operating procedures in the health facility to create a different client flow. Clients who are experiencing or have a history of fever are tested for malaria when they first visit the health facility, before seeing a provider. Clients are then provided with their test results prior to the provider consultation, so the provider already has the RDT results when assisting clients.

How does the solution address behavioral barriers?

- Changes the default option: provider does not need to decide whether or not to test for malaria.
- Alleviates time scarcity: reduces the duration of each consultation for providers and clients by incorporating testing into patient registration.
- Dissuades providers from using shortcuts due to time scarcity by providing the results up front.
- Leverages primacy and anchoring effects, a bias toward information that is presented first and then making incremental adjustments based on additional information, by introducing test results to clinicians before they have a chance to form an opinion on the diagnosis.

**Revised consultation packet including
pediatric evaluation form and fever care card**

A consultation packet is used by providers to evaluate clients during consultations. A revised form guides a provider through 10 comprehensive steps for consultation, encouraging them to reflect and consider other diagnoses and causes of fever.

A Fever Care Card is provided to caregivers of children under 5 who present with a fever, offering information on managing fevers at home, warning signs to be aware of, and a promise to provide expedited service to clients returning with the card in hand.

How does the solution address behavioral barriers?

- Reminds providers during decision-making of their roles and responsibilities, which primes positive identities; that is, the tendency for people to behave in a way that fits with stereotypes associated with that identity.
- Encourages providers to consider a wider range of possibilities for diagnosis versus presumptive diagnosis of malaria, combating automaticity, an automatic response pattern or habit.
- Makes it easier to say no to client pressure for medication: the packet is something tangible providers can give to clients in lieu of inappropriate prescriptions.
- Reduces ambiguity and hassles for clients: outlines danger signs to aid in client decision-making and prioritize returning clients.

[illegible]

Fever Care Card

[illegible]

Evaluation Form

Data and accountability devices

A commitment poster tracks monthly progress towards appropriate testing and treatment of positive malaria cases and is signed by providers to demonstrate their commitment to improving malaria case management in the health facility.

A data validation process examines the number of malaria tests conducted and the number of positive malaria test results compared to ACTs dispersed.

Supportive supervision visits are conducted by local government area representatives with facility leadership to provide coaching and troubleshoot challenges.

Management meetings are held to discuss data reconciliation and to engage staff in group problem solving.

How does the solution address behavioral barriers?

- Encourages compliance with guidelines through strengthened data monitoring. The Hawthorne effect suggests that showing providers that their behavior is being observed may alter their behavior.
- Creates reference points for providers to evaluate their performance.
- Encourages providers to reflect on and reconcile inconsistencies between their ideals and their observed behavior.

Provider communication package

A provider dialogue framework and a group discussion guide aim to correct base rate neglect and increase trust in RDTs.

A provider-facing poster emphasizes the validity of the RDT and reinforces messaging on other causes of fever.

How does the solution address behavioral barriers?

- Corrects providers' misperceptions about health risks and appropriate responses.
- Reinforces protocols and builds provider understanding for appropriate diagnosis and treatment.



Quality Assured Poster

Client communication package

Health talks in the outpatient department remind clients that not all fevers are malaria and share ways to manage fever care at home.

Ward talks are conducted in the community to build acceptance of client flow changes at the facility.

Posters hung in the health facility reinforce messaging for clients that not all fevers are malaria.

How does the solution address behavioral barriers?

- Corrects clients' misperceptions about health risks and appropriate diagnosis and treatment.

Key Takeaways

The designs outlined above are being pilot tested in early 2020 in 12 facilities across 3 Nigerian states. The findings of the pilot will allow for a better understanding of the designs' feasibility in the context of Nigerian health facilities and adaptations required for their broader implementation.

A behavioral design approach to provider behavior change allowed the project to think beyond clinical capacity when investigating drivers of the problem, which informed a robust solution design. It also provided a useful framing of the “know-do” behavioral gap: in this case study, providers understood the treatment guidelines but were still not making treatment recommendations based on RDT results.

The designs demonstrate efficient approaches in that they can be integrated into and leverage the existing health system, as well as address barriers at several different points within the provider-client interaction. The “testing before consultation” change to client flow is an example of a promising process-oriented solution that can be implemented in addition to product-oriented designs such as a job aid.

Cross-Cutting Findings in the Application of Behavioral Design to Provider Behavior Change

This brief is one of a series on the application of behavioral design to provider behavior change programming in Zambia, Malawi, and Nigeria. While the context varies across country programs, Breakthrough ACTION identified several common behavioral insights relevant to provider behavior change.

1. The environment in which providers work and the feelings of **scarcity** and subsequent tunneling generated by that environment have critical implications for providers' decision-making and ability to follow through on intentions. Often these challenging environments can exacerbate the effects of other behavioral barriers.
2. In the three program examples, providers demonstrated **risk aversion**. Rather than adhering to best practices or protocol, providers acted in a way that they perceived to minimize the risk of a particularly salient poor health outcome, such as missing a case of severe malaria, even when compliance with testing and treatment protocols would lead to better overall health outcomes.
3. Understanding a provider's **mental model** is important to understanding a provider's actions. While there is no consistent provider mental model across the 3 countries, faulty mental models contributed to a behavioral barrier in each of the three programs examined. In Nigeria, providers viewed RDTs as a confirmation of a clinical examination rather than a diagnostic tool, which made it more difficult for them to follow an RDT result that conflicted with their prior clinical assessment.
4. Actors other than the provider can be critical to both diagnosing behavioral barriers and developing solutions to address them. **Clients' behavior** forms part of the context that influences that of the providers and vice versa. In Nigeria, providers perceived pressure from clients to dispense malaria treatment. To address this, client-facing communication included messages that not all fevers are malaria.
5. Providers tend to prioritize actions and outcomes that are **measured** or on which their performance is evaluated. This was considered in the design of a data validation process, thereby bringing attention to appropriate testing and treatment of positive malaria cases.

While not an exhaustive list of behavioral barriers or approaches to behavior change, these programs highlight some key areas of exploration in designing and implementing provider behavior change activities.

Endnotes

¹ Federal Ministry of Health. National guidelines for diagnosis and treatment of malaria. 4th ed. Abuja: National Malaria Control Programme, 2011

² Mokuolu et al., “Provider and Patient Perceptions of Malaria Rapid Diagnostic Test Use in Nigeria: A Cross-Sectional Evaluation.” Malaria Journal, 2018

³ 2015 Nigeria Malaria Indicator Survey (2015 NMIS), National Malaria Elimination Programme (NMEP)

⁴ Onwujekwe O, Uzochukwu B, Dike N, Uguru N, Nwobi E, Shu E. Malaria treatment perceptions, practices and influences on provider behaviour: comparing hospitals and non-hospitals in south-east Nigeria. Malar J. 2009;8:246. doi: 10.1186/1475-2875-8-246.

⁵ Zurovac D, Rowe AK. Quality of treatment for febrile illness among children at outpatient facilities in sub-Saharan Africa. Ann Trop Med Parasitol. 2006;100:283–296. doi: 10.1179/136485906X105633.

This publication is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents are the responsibility of Breakthrough ACTION and do not necessarily reflect the views of USAID or the United States Government.