Breakthrough ACTION-Nigeria

Pilot Report

Applying Behavioral Economics to Improve Malaria Case Management in Nigeria

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About Breakthrough ACTION

Breakthrough ACTION ignites collective action and encourages people to adopt healthier behaviors—from using modern contraceptive methods and sleeping under bed nets to being tested for HIV—by forging, testing, and scaling up new and hybrid approaches to social and behavior change (SBC).

Firmly grounded in proven practices, Breakthrough ACTION works in partnership with governments, civil society, and communities around the world to implement creative and sustainable SBC programming, nurture SBC champions, mainstream new techniques and technologies, and advocate strategic and sustained investment in SBC.

Breakthrough ACTION is a partnership led by the Johns Hopkins Center for Communication Programs in collaboration with Save the Children, ThinkPlace, ideas42, Camber Collective, International Center for Research on Women, and Viamo.

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- National Malaria Elimination Program
- State Hospital Management Boards
- State Primary Healthcare Development Agencies
- State Ministries of Health
- State Malaria Elimination Programs
- Integrated Health Project
- PMI for States
- Global Health Supply Chain-Procurement and Supply Management
- President's Malaria Initiative
- LGA and state supervision teams in Akwa Ibom, Kebbi, and Nasarawa



List of acronyms

BA	Breakthrough Action
BE	Behavioral Economics
CHEW	Community Health Extension Worker
DHS	Demographic Health Survey
FCC	Fever Care Card
IMCI	Integrated Management of Childhood Illness
IRB	Internal Review Board
LGA	Local Government Area
MP	Malaria Parasite
OPD	Out-Patient Department
PEF	Pediatric Evaluation Form
PHC	Primary Health Center
PMI	President's Malaria Initiative
RDT	Rapid Diagnostic Test
SBC	Social and Behavioral Change

SHF	Secondary Health Facility
ТВС	Testing Before Consultation
USAID	United States Agency for International Development
WHO	World Health Organization

OPD

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Executive summary (1)

Behavioral barriers to malaria case management

Many health care providers do not base their treatment of suspected malaria cases on malaria parasite test results. The 2018 Nigeria Demographic Health Survey found that among children with fever in the two weeks preceding the survey, just 14% were tested for malaria, and that 42% of women and 54% of men say they would seek malaria treatment even after testing negative for malaria. Interviews with health care providers and observations at 17 facilities conducted by Breakthrough ACTION in Akwa Ibom, Kebbi, and Nasarawa states suggest that well-intentioned providers' failure to adhere to national testing and treatment guidelines arises from a combination of the hectic environment at the typical health facility, and providers' beliefs and misunderstandings about malaria's prevalence, their ability to identity malaria from its symptoms, and the reliability of test kits.

Designs and rationale

- **Testing before consultation**, an adjustment to the flow of clients to ensure that clients with fever have malaria test results when they see providers.
- **Consultation tools**, including a Pediatric Evaluation Form and Fever Care Card, to help providers explore diagnoses beyond malaria, and to manage provider concerns.
- Data validation, supportive supervision and a performance tracking poster to accurately measure and address challenges in a facilities' adherence to national testing and treatment guidelines, and to create a feedback channel through which to communicate that performance to staff.
- **Posters and guided conversations** to educate providers on testing and treatment requirements, and to set expectations for appropriate care among clients.

Testing the feasibility of designs

Designs were implemented at 12 health facilities across the 3 states, to evaluate their ability to be implemented under real life conditions and suitability for implementation at scale.

Executive summary (2)

Recommendations and next steps

Breakthrough ACTION will work closely with project stakeholders to incorporate the lessons and recommendations below into revised designs for scaled implementation at additional facilities in Akwa Ibom, Bauchi, and Kebbi.

Design	Potential for scaling
Testing Before Consultation	Yes, with minimal changesBest suited for medium to large PHCs
Pediatric Evaluation Form	 Yes, with some changes Adjust content to better meet needs Explore alternative formats to increase sustainability
Fever Care Card	Major changes neededProviders confused about purpose and intended audience
Data Validation and Supervision	 Yes, with considerable changes Reduce the length and explore opportunities for integration
Progress Tracking Poster	 Yes, with considerable changes Simplify the indicators and increase visibility Explore alternative design to increase sustainability
Health Talks	 Yes, with considerable changes Explore changes to make talks easier to conduct due to workload, client volume or audience attention
Provider Communication	 Yes, with considerable changes Explore opportunities to refresh key messages Seek endorsements from relevant opinion leaders and authority figures

Behavioral barriers to malaria case management

Nigeria's malaria burden is exacerbated by sub-optimal case management. Using a behavioral economics approach, we identified behavioral barriers that keep providers from following national malaria testing and treatment guidelines.

Severity of malaria in Nigeria

The prevalence of malaria in Nigeria is among the highest in the world.

Nigeria is included in the World Health Organization (WHO)'s 10+1 initiative, which includes 11 countries identified in 2016 as jointly contributing to more than two-thirds of global malaria cases and estimated deaths.¹

The National Malaria Strategic Plan 2014-2020² and National Guidelines for Diagnosis and Treatment of Malaria 2015³ emphasized the need for parasitological confirmation for the prescription of antimalarial medication.

However, in 2018, the Nigeria Demographic Health Survey (DHS) reported that only 14% of children with a fever in the preceding two weeks had blood drawn for malaria testing,⁴ indicating that the practice of testing for malaria may not be widespread across public and private health facilities and vendors.

Large Burden of Disease

The 2018 DHS found that almost a quarter (23%) of all children under the age of five years tested positive for malaria by microscopy.

Low Rates of Testing

Only 14% of children under five years reported to have had a fever in the two weeks preceding the survey had blood drawn for malaria testing

Presumptive Treatment is Widespread

42% of women and 54% of men said they would seek malaria treatment even after testing negative for malaria



A behavioral economics approach

Why behavioral economics?

Behavioral economics (BE) brings together academic disciplines like economics, psychology and neuroscience that help us understand *why* people behave the way they do.

It teaches us that a lot of human behavior is shaped by the interplay between the thought processes of individual actors, and the situations or environment in which they are making decisions.

By understanding this relationship, we can begin to design products, programs and policies that better meet people's needs, for the greatest possible impact.

The project team applied BE to case management in five steps:



- **Problem definition:** identifying specific provider behaviors contributing to case management challenges.
- **Behavioral diagnosis:** understanding the factors leading providers to behave in the way identified in problem definition.
- **Design:** designing interventions to address the factors contributing to providers' behavior.
- **Feasibility test:** implementing interventions at a small number of facilities in 3 states to understand changes needed to operationalize them at scale.
- **Scale:** using lessons from the feasibility test and stakeholder feedback to adapt designs and implementation strategies for implementation at scale.

Defining a behavioral problem

Methods

To identify behavioral barriers to proper case management, the project team conducted a formative assessment that included two rounds of data collection in September and November 2018 that included:

- 3 states (Akwa Ibom, Kebbi, and Nasarawa, to represent three separate geopolitical regions)
- 29 hospitals and clinics
- 92 interviews with facility staff (doctors, nurses, CHEWs, as well as laboratory, pharmacy and records staff)
- 56 interviews with clients (caregivers of children under five years old)

Insights from interviews and facility observations were supplemented by secondary research.

The behavioral problem

Health care providers do not base their treatment of suspected malaria cases on malaria parasite test results.

We want providers to test all clients with fever (or a history of fever) for malaria, and only treat those who test positive with antimalarial medicines.

Why this problem is important

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Reduce Misdiagnosis

Providers who mistakenly assume their clients have malaria may overlook illnesses like pneumonia that are among the leading causes of child mortality in Nigeria.



Reduce Waste

Anti-malarial medicines only treat malaria. Issuing them to clients with other illnesses results in fewer medicines being available to clients who could actually benefit from their use.

Expected fever case management process

Fever case management is a complex process. The diagrams below use **blue** arrows to illustrate the expected flow of clients with a fever (or history of fever) within a typical health facility.



The following pages detail how these same steps create barriers that ultimately undermine case management.

Behavioral barriers in case management (1)



Care-seeking behavior

Clients arrive at the facility and wait to see providers. Most clients rush to facilities early in the morning to ensure they are seen before clinics close in the early afternoon.

Hectic work environment

The influx of clients results in long wait times: clients may wait for hours before seeing providers. Waiting clients usually cluster in the spaces immediately outside consultation rooms, while they wait for their turn to consult with a provider.

Providers feel they need to rush

Providers feel a need to rush through their consultations in an attempt to see all clients. Many are acutely aware of malaria endemicity, and they worry about missing malaria cases, or delaying their treatment.

Behavioral barriers in case management (2)



Testing logistics may be filled with hassles

Providers determine which clients need to be tested for malaria, and either conduct tests themselves or send the clients to be tested in facility labs. Malaria test kits available in Nigeria typically require just 15 minutes to yield results, but client volume often results in longer wait times, as clients queue to be tested. Clients must then return to providers with their test results for final diagnosis and treatment. Those who test positive for malaria may be issued anti-malarial medications, but those who test negative need additional diagnosis.

Provider beliefs and mental models

Many providers overestimate their ability to recognize clients suffering from malaria by their symptoms, and see the test kit as a tool to confirm, but not replace, their initial assessment. Many providers also express a distrust of RDT results, overestimating the likelihood that kits could yield false negative results. This is likely because providers' perceptions about malaria's prevalence lead them to expect fewer negative results than they see at their facilities. It may also be due to inaccurate beliefs about the susceptibility of RDT kits to damage in the supply chain and storage, and the prevalence of malaria parasites that RDT kits might not detect

Designs and rationale

Interventions to improve testing and treatment practices were designed in close collaboration with partners and stakeholders to address specific behavioral barriers to malaria case management.

Design strategies to address behavioral barriers



Design methodology

300+ design ideas

Generated in a co-design workshop with participants representing 19 partner and stakeholder institutions

facility visits

12

To collect feedback on design prototypes from staff and clients in Akwa Ibom, Kebbi, and Nasarawa

design clusters

Piloted at 12 facilities to test their feasibility for implementation at scale

Interviews with clinicians, lab, pharmacy, and records staff and clients Providers and client interact with design prototypes in real world settings Iterative revisions to design based on feedback from users and stakeholders

Design: Testing Before Consultation (TBC)

What is it?

Incorporating testing for malaria parasites into the fever screening process, to ensure clients have results when they first meet with a provider.

- Changes the default option: providers no longer need to decide whether to test clients.
- Streamlines process: incorporating testing into client registration activities may save time if clients don't require additional tests.
- Ensures providers have results for consultations: before they have made up their minds about a client's diagnosis.



Design: Data Validation and Supervision

What is it?

A monthly process for reconciling the numbers of anti-malarial medications issued with positive malaria test results at a facility. This data validation exercise is supplemented by visits from an external supervisor to discuss performance related metrics with facility officers and to identify strategies for improvement.

- Encourages reflection: highlighting discrepancies between between data sources.
- Creates accountability: supervision adds accountability to keep improving performance and creates opportunities for problem solving.

Tally process to gather data and compare across sources	A COLOR	US Presden's Matria Insistee	Breakthrough	Supervision to address issues based on data	
		Malaria T	esting and Tre	eatment 1	
Malaria Testing and Treatment T	ally Form	Supportiv	e Supervision	Checklist	
I,, verify that I have accurately comple Name of Supportive Superviser testing and treatment tally. Signature: Title:	eted this month's malaria	rently that these completed these supportive Supervisor Name: Signature: Date: SECTION 1: Prepare for your visit. Com	supervision responsibilities and di Officer (p.ch: Health Facilit LGA:	reused feedback with the affect-in-charge. rge: r; rather supporting supervision visit.	
Health Facility / LGA:		A. Data for updating facility poster	(refer to "Malaria Testina and i	Treatment Tally Form" for the facility).	
		Complete table below:	Example:	, , , ,	
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Data Source: Lab Notebook		Total ACTs D	(A2) x 100		
Type of Malaria Test Number of Tests Positive Results Microscopy	Negative Results	***Adherence to Malaria Test Results =	B1 X 100 50%	%	
mRDT (A1) Total (A1) Name of Lab Technician:		Data Quality Assurance Results (Please mark indicators with di % Fever patients teste % Difference in numb % Difference in numb % Difference in numb % Difference in numb % Difference in numb	refer to "Molaria Testing and Tre fferences more than 10% or -10 d for malaria er of total malaria tests recorded er of positive malaria test results ACTs issued and recorded er of positive malaria test results — —	atment Taily Farm", Section D). %c in OPD register and lab and recorded results and ACTs distributed	
Section B: ACTs Dispensed in the Past 30 Days		 Have there been any stock out 	ts this month? ImRDT	ACT Neither mRDT nor ACT	
Data Source: Stock Bin Cards and Pharmacy Registry 1. Arthemether/Lumefantrine.		 c. Results from Observations (abservations) Testing Protocol Are providers/lab technicians checking all c 	ve the facility to complete table b	iciaw). Issues Observed	
AL Pharmacy Closing Count AL Units Moved from Store to AL P (Previous Month) Pharmacy (Bin Card) (B1) (B2) (B3)	harmacy Closing Count (This Month)	fever before consultation? - Are all fever cases tested for malaria before with provider? - Are clients educated on the purpose of test test period	e consulting ves No		
Supervisor			S	upervisor notes	
records data				irregularities in	1
from various				performance	
data sources				metrics	
					(
					1

Design: Performance Tracking Poster

What is it?

A performance measurement tool that brings visibility to facility staff about how they are performing on a monthly basis. The poster includes a space for staff to sign their names to "commit" to the guidelines and to move towards their target.

- A collective commitment: opportunity for staff to reaffirm their commitment to national case management guidelines.
- Visible feedback: provides staff with a monthly reminder about their commitment, and how well they have been adhering to that commitment.



Design: Pediatric Evaluation Form (PEF)

What is it?

A unified script based on IMCI best practices to help providers conduct a comprehensive examination of pediatric clients. Includes 10 prompts for providers to inquire about key symptoms, with suggested actions providers can take to address each one.

- Discourages presumptive diagnosis: encourages providers to consider causes of fever other than malaria.
- Promotes comprehensive consultations: the form nudges providers to explore issues like immunization status and nutrition that they might otherwise overlook.



Design: Fever Care Card (FCC)

What is it?

A pamphlet for providers to give to clients containing guidance for caring for children with fever at home and identifying danger signs that indicate when a client must return to a facility. The pamphlet includes a slip allowing returning clients to have an expedited consultation.

- Mitigate client pressure: providers do not feel that they are sending clients who test negative for malaria home empty-handed.
- Reduce perception of risk: reassures providers that clients know when to return with their children, and returning clients won't have to wait to see them.



Design: Client Communication

What is it?

A daily talk provided by staff in facility waiting rooms describing ways to manage fevers in children. Posters installed in facility waiting areas describe appropriate careseeking and treatment practices.

- Addresses providers concerns about client care-seeking behavior: teaches clients to manage fevers, and to recognize signs of serious illness that require urgent care.
- **Empowers clients:** familiarizes clients with testing and treatment best practices, helping them to recognize other causes of fever are possible.



Design: Provider Communication

What is it?

A supervisor-led group discussion for facility staff, and a set of posters installed in consulting rooms on the topic of testing and treatment practices

How could it help?

- Corrects erroneous beliefs about testing and treatment practices: creates an opportunity for providers to reassess their beliefs.
- Reminds providers of guidelines: visual reminders of testing and treatment guidelines in the consulting areas where providers can immediately act on them.

Asks providers about common misperceptions about diagnosis and treatment



Reinforcing key messages about testing and treatment



Is it really malaria?

Malaria rapid tests are ACCURATE and QUALITY-ASSURED. If negative, do not treat as malaria. Seek another cause of fever.

Testing the feasibility of designs

Five design clusters were piloted at 12 facilities to assess their feasibility for implementation at scale.

Pilot objectives: assessing feasibility

Objective and limitations

The pilot was not intended or designed to evaluate the impact of the designs on malaria testing or treatment practices.

Our goal was to test the suitability of the designs for implementation in real life settings, and to evaluate their potential for implementation at scale.

As a result, the findings shared in subsequent pages are encouraging, but should be understood as lessons learned about the designs from operationalizing them at select facilities, not as evidence of their ability to achieve a behavioral change.

Assessment Criteria



Were the designs taken up and received well?

- ✓ Adoption: Was the design used as it was intended?
- ✓ Acceptability: Was the design well received by staff and clients?



Were designs suited to facilities and implemented well?

- Feasibility: How well did the design fit the context in which it was to be used?
- ✓ **Fidelity:** How faithfully was the design implemented?

Do the designs have potential for scaling?



- Sustainability: Could the design be implemented for an extended period?
- Indications of impact: What indications do we have that the design might increase adherence to guidelines?
- Further implementation: What changes are needed for the design to be scaled?

Pilot parameters



Duration: 3 months: October - December



Locations: 3 states: Akwa Ibom, Kebbi and Nasarawa



Facilities: 12 facilities: 3 PHCs + 1 SHF in each state

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Facility selection criteria: Accessible to supervisors; medium to high volume; history of poor adherence; involvement in previous project phases; sufficient staffing at LGA level for supervision

Monitoring data

Data validation forms and supervision checklists:

- 1 facility per month
- Included observations by supervisors regarding implementation of designs as well as data recorded by staff

Caregiver exit interviews: N=65

 Included questions regarding client experience with designs as well as overall satisfaction

Pre/post provider surveys: N=207 (pre-pilot), N=137 (post-pilot)

• Included identical questions about testing and treatment to measure change in knowledge and beliefs

Lessons learned meetings: 3 state supervisor-level meetings, and 12 facility-level meetings

 Focus group discussion format to discuss implementation experiences

Pilot takeaways by design

Implementation learnings about each assessment criterion, presented design by design. Additional feedback detailing specific adaptations to designs is not presented, but will be evaluated and incorporated into discussions with implementing partners and stakeholders as designs are adapted for scale.

Testing Before Consultation (TBC)

Was this design taken up and received well by facilities?

Yes!

- TBC saw high uptake at facilities, with 11 out of 12 facilities implementing TBC in the first 2 months.
- Providers and LGA supervisors rated TBC as their favorite design, citing improved organization and client flow.
- Clients reported high satisfaction with this process change, and providers reported that clients appreciated the better flow.

Was this design well suited to facilities & implemented well?

Yes!

- TBC integrated well into existing processes.
- Facilities reported challenges meeting increased demand for malaria test kits, which led to stock-outs at some facilities.
- Supervisors also recorded shortages of commodities associated with testing, such as gloves and cotton swabs, as being of concern to officers in charge.



Does this design have potential for scaling?

Yes, with few changes

- TBC is ideal for larger facilities, including secondary facilities and larger PHCs. It is not well suited to smaller clinics and health posts where a single provider may conduct all case management steps.
- The design required more adaptation at secondary facilities than PHCs.
- Facilities should anticipate an increase in RDT consumption.

Pediatric Evaluation Form (PEF)

Was this design taken up and received well by facilities?

Yes!

- Providers report that they are less concerned about having missed something and that clients are satisfied with the thoroughness of consultations.
- Providers report it can be both time-saving and timeconsuming: it helps them think of questions to ask, but asking takes time.
- Providers at PHCs expressed satisfaction; doctors at SHFs reported time constraints.

Was this design well suited to facilities & implemented well?

Adequate

- Providers found the PEF user friendly and easy to understand.
- Supervisors reported PEFs left incomplete, especially at SHFs. However, client interviews suggest providers use the form as a guide even if they fail to complete it.
- Doctors at SHFs reported a lack of space to record all of their observations about their clients.



Does this design have potential for scaling?

Yes, with few changes

- Facilities are unlikely to be able to print forms to use.
- The form could be strengthened by emphasizing antibiotic use, to monitor any substitutions that providers may be inclined to make.

"Kai, it will make the work easier, walahi (by God)..."

- Nurse, Kebbi

Fever Care Card (FCC)

Was this design taken up and received well by facilities?

Not as intended

- Frequently used for illustrative support and guidance for OPD Health Talks.
- Very little uptake for its intended use.

My use of the Hausa language is not very strong, but with the fever care card written in Hausa and with pictorials, it was very easy to use the card.

- Staff member, Kebbi

Was this design well suited to facilities & implemented well?

Adequate

- Some providers reported being confused about the purpose of the FCC and who it was for.
- Providers liked that they were short and found the illustrations helpful when conducting Health Talks.
- Few (3) clients returned with the priority slip, and all were seen promptly.



Does this design have potential for scaling?

Needs major changes

- Facilities do not expect to be able to sustain printing fever care cards for their own use.
- Repurpose FCC content and images for use as a guide for health talks, taking into account other feedback relating to OPD Health Talks.

Data Validation and Supervision

Was this design taken up and received well by facilities?

Adequate

- The monthly validation exercises and supervision visits were considered useful by officers in charge.
- Some staff members may have found the visits intrusive.

Without data we will be like blind guards moving without direction or focus.

- Staff member, Nasarawa

Was this design well suited to facilities & implemented well?

Adequate

- Poor quality of data maintained at facilities made data reconciliation exercises challenging.
- Staff cited a lack of available personnel to maintain good records. They find it difficult to manage client volume as well as maintain outpatient records.
- Irregular data entry and confusion from multiple staff managing data entry.



Does this design have potential for scaling?

Yes, with major changes

- LGA supervisors reported that supervision visits were very time consuming, sometime taking over four hours, and would be difficult to sustain.
- Enable facilities to validate data themselves.
- Reduce the length of the supervision checklist and explore opportunities to integrate with other structures for validation and supervision.

Performance Tracking Poster

Was this design taken up and received well by facilities?

Yes!

- The poster was installed and signed by providers at all facilities.
- Supervisors were able to correctly calculate and record performance indicators on it each month.

I will strive to have a good performance that can be displayed publicly.

- Technician, Kebbi

Was this design well suited to facilities & implemented well?

No

- Most providers had limited understanding of the poster, and were unable to explain details such as the differences between the two indicators on the poster.
- Facilities were reluctant to place the poster in public places, but placement of the poster in the OIC's office meant that many staff were not well-acquainted with it.



Does this design have potential for scaling?

Yes, with major changes

- Simplifying the metrics used to track facility performance will make the poster easier for staff to understand, as well as making validation and supervision activities more manageable.
- Adjust location or use of posters to increase visibility and salience to providers.

Client Communication

Was this design taken up and received well by facilities?

Adequate

- Posters were installed at all facilities.
- Health talks were challenging to monitor: of 34 client exit interviews conducted during the pilot, 18 interviewees had attended a health talk.

Was this design well suited to facilities & implemented well?

Adequate

- Conducting talks in waiting areas was reported to be challenging at many smaller facilities because clients trickle in one at a time, while at larger facilities it was difficult to make the time or capture attention.
- One facility's staff reported smoother implementation experience due to splitting up sections of the talk amongst different client touch points (triage, testing, consultation).



Does this design have potential for scaling?

Yes, with major changes

 Consider dividing the content of OPD Health Talks between two or more touch points in the facility.

The chemist won't test you; when you complain they will give you drug. But when you come here they test you before they give you drug.

- Client, Akwa Ibom

Provider Communication

Was this design taken up and received well by facilities?

Yes!

- Posters were installed and dialogues held at each facility.
- Providers were engaged during discussions, and freely discussed misunderstandings about testing and treatment.

It is better to treat a patient very well than to treat just because you want to treat. It takes away professionalism.

- Nurse, Kebbi

Was this design well suited to facilities & implemented well?

Adequate

- In post-pilot discussions, recall of key messages from the Provider Dialogue Framework varied by state: while providers in Akwa Ibom were able to highlight key points, providers in Kebbi and Nasarawa struggled to recall the discussion.
- However, pre/post survey results suggest improved knowledge and attitudes across states.



Does this design have potential for scaling?

Yes, with major changes

- Instead of a one-off session, explore opportunities to repeat the discussion in appropriate fora, such as clinical meetings or supervision visits.
- Ensure explicit endorsement of the key messages from opinion leaders, such as senior physicians and the Director of Medical Services in each state.

Increased adherence to treatment guidelines



Average Facility Adherence in each State, by Month (%)

- Adherence is calculated as the ratio of ACTs prescribed to the number of positive malaria test results recorded at a facility, expressed as a percentage. Facility adherence less than 100% indicates a facility issued more ACTs than warranted by the number of positive malaria test results recorded at that facility. Facility adherence greater than 100% indicates a facility issued fewer ACTs than required to treat positive malaria test cases.
- On average, facilities in every state tended to converge towards their goal of 100% adherence over the three month pilot period.

SHFs have more potential to improve than PHCs

Facility Adherence at PHCs and SHFs, by Month (%)



- Secondary health facilities (SHFs) scored more poorly on our metric for adherence to treatment guidelines than
 primary health centers (PHCs). On average, the three SHFs included in our pilot tended to be further away from the goal
 of 100% adherence in each month than the nine PHCs.
- However, secondary facilities also experienced greater increases in their adherence over the course of the pilot period than primary health care facilities, suggesting that SHFs may have more potential to benefit from the scaling of the intervention.

Malaria testing exceeds reported fever cases



Tests Conducted on Clients without Fever/History of Fever (%)

- Facility records indicate that there were more malaria tests conducted than the number of fever cases reported. This trend persisted for the duration of the pilot: in each month, the number of tests conducted across all facilities exceeded the number of clients with fever by more than 30%.
- Plausible explanations provided by facility staff include: (1) underreporting of fever cases in the facility's out-patient register; (2) clients visiting facility labs for testing without first registering at the out-patient department, and (3) testing of clients with suspected malaria, who did not exhibit fever symptoms.

Improvements in staff knowledge and attitudes



Correct or desirable responses to knowledge questions (%)

- Knowledge and attitudes of facility staff were measured through identical surveys that staff completed both at the start and at the end of the pilot period.
- The percentage of correct, or desirable responses to each question was greater in the post-pilot survey than in the pre-pilot survey, suggesting that staff knowledge and attitudes improved over the course of the pilot.

Improvements in data quality

Difference between data sources (%)



- Data quality was measured by comparing records of the same key indicators (test-positive clients and ACTs issued) in different data sources within a facility. Ideally, there should not be any discrepancy between data sources.
- While the discrepancy between sources was high, it reduced over the course of the pilot. For both indicators, discrepancy between different data sources reached its lowest level in month 3.

Strengths and limitations of the pilot

Strengths

- Formative research: identifying the determinants of behaviors undermining malaria case management.
- High levels of engagement: participation of stakeholders and providers in the design and piloting process ensured that designs were able to be implemented at facilities.
- **Complementary suite of designs:** designs were developed to reinforce and build on each other.
- Multiple data sources for monitoring and feedback: interviews with providers and clients, observation of facilities, and administrative data provided a rich set of data to understand the strengths and limitations of individual designs.

Limitations

- Small, unrepresentative sample of facilities: facilities were selected to be easily accessible, and to avoid facilities with supply chain challenges.
- Inability to monitor case management comprehensively: challenges with data quality made it difficult to collect consistent data for non-malaria behaviors such as the substitution of other medicines, like antibiotics, for ACTs.
- Inability to match pre- and post-pilot survey responses: IRB restrictions on personal identifiers made it impossible to match pre- and post-pilot survey responses of individuals. Instead, we compared facility averages. Fewer individuals responded to the post-pilot survey than the pre-pilot survey.
- Impossible to isolate effects of individual designs, or of implementation factors because designs were rolled out as a combined package; facilities required significant support in implementation; and data quality improvements occurred simultaneously with behavior change.

Recommendations and next steps

Summary of design learnings from feasibility assessment, and next steps with respect to revisions and scaling.

Moving towards scale



Choosing designs for scale-up

The pilot suggests that most designs can be implemented at facilities like the ones we included in our pilot. A summary of the areas where pilot learnings suggest designs may require adaptation, or be better suited to some types of facilities than others, is included in a table on the following page.

Since the designs (1) address different behavioral barriers to malaria case management, (2) are intended to support and reinforce each other, and (3) were piloted simultaneously at all facilities, we recommend that the designs be implemented together as a single intervention where possible.

Choosing where to scale

Individual decisions about whether to scale any of the designs in a given state or facility may be guided by contextual factors.

However, scale-up of the designs is likely to be most successful at facilities that are similar to those included in the pilot, and meet the criteria of (1) being accessible to supervisors; (2) experience a medium to high client volume; (3) having a history of poor adherence to testing and treatment guidelines; and (4) have sufficient staffing at LGA level for supervision. Additionally, all of the designs assume that facilities do not have any challenges in acquiring the supplies and equipment they need for malaria case management.

Summary of design recommendations

Design	Learnings & Recommendations	Potential for scaling
Testing Before Consultation	 Best suited for medium to large PHCs SHFs require more adaptation than PHCs Anticipate initial increase in RDT consumption 	Yes, with minimal changes
Pediatric Evaluation Form	 Add pre-referral treatment and family medical history Emphasis on antibiotic use/misuse during trainings For SHFs, more space for exam and treatment plan 	Yes, with minimal changes
Fever Care Card	 Providers confused about purpose and intended audience Saw more use as a guide for health talks design (brevity and illustrations were appreciated) 	Major changes needed
Data Validation and Supervision	Reduce the length of the supervision checklistExplore opportunities to integrate with existing processes	Yes, with considerable changes
Progress Tracking Poster	Enable facilities to update the poster, with supervisor oversightSimplify the indicators and increase visibility	Yes, with considerable changes
Health Talks	 Health talks were difficult to conduct due to workload, client volume or audience attention Splitting up sections was a strategy that worked in one facility 	Yes, with considerable changes
Provider Communication	 Repeat discussion messages in clinical meetings or supervision visits Seek endorsement of key messages from relevant opinion leaders and authority figures 	Yes, with considerable changes

Next steps

Adaptation of designs

Pilot learnings and results will be used to further adapt designs to the needs of facility staff and clients. Adaptation will include additional rounds of stakeholder feedback and usability testing as needed to ensure that all changes reflect the desires of users and stakeholders, while also allowing designs to continue to work as intended.

2

Coordination with implementing partners

Close collaboration with implementing partners to identify and prepare resources and strategies to ensure the transfer of knowledge and learnings for the successful implementation and monitoring of designs at scale. This might include the establishment of monitoring and evaluation structures for the successful implementation of designs at scale, support to build buy-in at new facilities, and other activities.

3

Implementation at scale

Scale-up will be led by service delivery partners, state governments, and malaria agencies. Breakthrough ACTION will provide technical assistance to implementing partners in coordinating the initial launch of revised designs at selected facilities, orientation of facility staff and local stakeholders, and implementation monitoring, as needed.

Endnotes

- 1. World Health Organization. The 10+1 Initiative: And Intensified Effort to Reduce Malaria Cases and Deaths. Global Malaria Programme.
- 2. Federal Ministry of Health. (2014). National Malaria Strategic Plan 2014-2020: A Road Map for Malaria Control in Nigeria. Abuja, Nigeria.
- 3. Federal Ministry of Health. (2015). National Guidelines for Diagnosis and Treatment of Malaria 3rd Edition. Abuja, Nigeria.
- 4. National Population Commission (NPC) [Nigeria] and ICF. (2019). Nigeria Demographic and Health Survey 2018.

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