


Evidence
Action



Deworm the
World Initiative

School-based Deworming in
Oyo State, Nigeria

Process Monitoring and Coverage Validation
Report



November 2019 Round

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Glossary

FLHF. Frontline health facility

FMOH. Federal Ministry of Health

LGA. Local government area

MDA. Mass drug administration

NTD. Neglected tropical disease

SAE. Severe adverse event

STH. Soil-transmitted helminths

WHO. World Health Organization

1.0 Executive Summary

In November 2019, Oyo state carried out its second round of school-based deworming for the year, the second year of deworming in Oyo, targeting both enrolled and non-enrolled children, ages 5-14 years. Treatment was given in twenty one local government areas (LGAs) endemic for both soil-transmitted helminths (STH) and schistosomiasis. The state targeted **4,953** public and private primary and junior secondary schools for deworming, and approximately **1,310,231** children.

Evidence Action monitors the key implementation processes before, during, and after each MDA to assess the effectiveness of training and supply chain, adherence to deworming protocol, and treatment coverage to inform program design and improvements. Evidence Action recruited an independent firm to collect data from a sample of 11 LGA training sessions, 27 teacher training sessions, 30 schools on Deworming Day, and 78 parents in the communities.

On average, 69% of expected schools were in attendance for teacher training, which was 2 percentage points lower when compared to the last round of deworming in Oyo (71%). The majority of schools that did not attend cited late invitations (50%), school unawareness (30%), teacher unawareness (15%), and late communication on change of the venue and date (15%). The best covered topic during LGA and teacher trainings was on drugs and drug administration, with coverage of key topics noted in at least 70% of training sessions. In post-training interviews, 80% of participants correctly responded to questions about this content area. Read more on training on [page 8](#).

Most schools (78%) had received drugs prior to Deworming Day, and all (100%) of participating schools had sufficient drugs to deworm all children on Deworming Day. However, only 83% of participating schools had all the key materials, including drugs, on Deworming Day. Read more on distribution on [page 14](#).

Overall awareness of Deworming Day was higher among parents of enrolled children (85%) as compared to the parents of non-enrolled children (22%). Ninety-four percent of parents that were aware of deworming indicated that they would be sending their children for deworming. Of the 3 (6%) parents that said they would not send their children for deworming, the reasons cited by each individual parent were: their children will be dewormed the next day, poor communication, and non-awareness. The main source of Deworming Day information cited by parents were children (70%) and teachers (55%). Read more on awareness on [page 16](#).

The rate at which schools conducted deworming was high, with 94% of expected schools distributing tablets on Deworming Day, up from 81% in round 1. All teachers provided the correct mebendazole dose, while most used the tablet pole for praziquantel dosing (92%). However, proper disposal of spoilt tablets was limited to 69% of schools. Deworming Day observations also indicated that non-enrolled children were dewormed in only 13% of monitored schools. Read more on drug administration on [page 17](#).

Coverage validation surveys were conducted within two weeks of MDA treatment in two LGAs to estimate the program reach and surveyed coverage in comparison to results reported by schools. Coverage validation for STH treatment indicated that 94% and 79% of targeted children in Olorunsogo and Ibadan North, respectively, were offered the drug (program reach) and that 91% and 71% of targeted children, respectively, swallowed the drug (surveyed coverage). Coverage validation for Schistosomiasis treatment indicated that 93% and 66% of targeted children in Olorunsogo and Ibadan North, respectively, were offered the drug and that 93% and 63% of targeted children, respectively, swallowed the drug. The overall surveyed coverage in Olorunsogo for STH was 91% in comparison to the WHO threshold of 75%, which suggests that the deworming exercise was successful. Read more on coverage validation on [page 18](#).

Table 1: Key Performance Indicators

	Percent
Target schools represented at teacher training	69%
Target schools with adequate drugs during deworming	100%
Target schools utilizing at least one awareness activity or material ¹	83%
Parents who report seeing or hearing about deworming through IEC deworming materials or word of mouth this round	74%
Target schools distributing tablets on Deworming Day	94%
Enrolled children present in school on Deworming Day	94%
Targeted children who report receiving unprogrammed deworming in the last six months	11%
Target population validated as swallowing albendazole tablets on Deworming Day based on coverage validation	80%
Target population validated as swallowing praziquantel tablets on Deworming Day based on coverage validation	77%

Conclusions: Overall, round two deworming implementation was successful, highlighted by high post-training knowledge of topics on worms, and drug and drug administration (at least 89%), a good supply chain with 83% of schools noted to have all key materials on Deworming Day, as well as the reported coverage for STH in both Ibadan North and Olorunsogo notably within 10 percentage points of the surveyed coverage indicating that the reporting systems were working. However, there were also challenges that should be addressed ahead of the next round of MDA, including encouraging timely attendance at both teacher and LGA training, increasing awareness of Deworming Day among parents, and improving practices during MDA such as hand-washing and utilization of reporting forms. The full summary of successes, challenges, and recommendations can be found on [page 21](#).

¹ IEC deworming materials include posters

2.0 Background

Evidence Action provides technical support to the Oyo state government as it conducts school-based deworming through mass drug administration (MDA) for school-aged children (SAC) in a bid to control parasitic worm infections. In November 2019, the second round of its second year of statewide school-based deworming took place in 21 LGAs in Oyo state which are endemic for STH and Schistosomiasis.

A total of **1,310,231** enrolled and non-enrolled children aged 5-14 years were targeted to receive deworming treatment in both public and private primary and junior secondary schools. Teachers (**5,037**) were trained to properly administer the safe and effective deworming drugs.

Evidence Action recruited an independent firm, Infotrak Research and Consulting, to monitor random samples of program activities to assess the quality of implementation, adherence to protocol, and supply chain effectiveness. During this round, monitors observed 11 LGA trainings, 27 teacher trainings, 30 schools on Deworming Day, and interviewed 78 parents. Evidence Action designed data collection tools and sampling methods and cleaned and analyzed the data from the above activities. The findings are presented in this report.

3.0 Methodology

3.1 Process Monitoring

Process monitoring was conducted in the 21 LGAs that conducted deworming. For the first time in November 2019, LGA training was monitored in Oyo state as a pilot for other states. A random sample of 11 LGA trainings (out of 21), 27 teacher training sessions (out of 221) and 30 schools implementing deworming (out of 4,953) were monitored. The sample sizes were calculated to meet a 90% confidence level and a margin of error of 15%, distributed across all LGAs based on the number of activities happening in each LGA.

At every LGA training, four participants were targeted for pre-training interviews and three participants targeted for post-training interviews. At every teacher training session sampled, one master trainer was to be interviewed, four participants (teachers) were targeted for interviews before the training, and four participants after the training. The participants interviewed were systematically sampled so that every third participant to arrive at the venue was interviewed pre-training and every third participant to receive training materials was selected for a post-training interview.

On Deworming Day, the monitors conducted interviews at the sampled schools with the following individuals:

1. Head teachers, to assess their knowledge of deworming, frontline health facility (FLHF) staff engagement, deworming preparedness, mobilization, and availability of deworming materials.
2. A member of the deworming team (usually a teacher), to ascertain their knowledge of deworming and the activities they conducted in preparation for deworming.
3. One parent who brought their children for deworming, to understand their experience with deworming.
4. Three children (two enrolled children from the class register and one non-enrolled child). This was conducted in one randomly selected class.
5. To assess the effectiveness of the community mobilization and sensitization methods, two systematically selected households with enrolled children and one household with non-enrolled children within the school catchment area were interviewed.
6. Finally, monitors observed one class as deworming occurred to assess adherence to guidelines, such as the recording of treatment, administration of the right dosage to the correct age-group, and deworming steps. Monitors also made observations to assess school infrastructure, including WASH facilities, presence and location of sensitization materials, and where deworming took place.

3.2 Coverage Validation

Coverage evaluation surveys were conducted within two weeks of the MDA in two randomly selected LGAs – Ibadan North and Olorunsogo for both STH and schistosomiasis treatment, with the purpose of validating coverage within the LGAs, confirming reported treatment data, and identifying reasons for non-compliance. Due to school holidays that took place during the planned CV data collection period, only community surveys were administered. A total of 1,622 children were interviewed from the two LGAs using a two-stage probability proportional to estimated size (PPES) sampling design.

Table 2 below shows the targeted and achieved sample sizes for the monitoring activities.

Table 2: Process monitoring targeted and actual sample sizes

Monitoring activity	Population	Target sample size	Actual sample size
LGA training			
Total number of LGA training sessions	21	11	11
Pre-training interviews		44	39 ²

² In some trainings, participants arrived late and thus the required sample was not met. Once training starts, monitors monitor other training aspects.

Post-training interviews		33	43 ³
Teacher training			
Total number of teacher training sessions	221	27	27
Pre-training interviews		108	104
Post-training interviews		108	105
Deworming Day			
Head teachers interviewed		30	30 ⁴
Total number of schools deworming	4,953	30	30
Parents interviewed		30	13 ⁵
Enrolled children interviewed		60	60
Non-enrolled children interviewed		30	3 ⁶
Community Mobilization			
Households surveyed - Parents of enrolled children		60	60
Households surveyed - Parents of non-enrolled children		30	17 ⁷
Coverage Validation			
Number of children		3,616	1,622 ⁸

4.0 Results

4.1 Review of LGA and teacher training

Prior to deworming implementation, training is provided to both health and education officials from the LGA level. The officials trained in LGA then act as trainers during teacher training. Phone calls (41%), official letters (41%), in-person communications (33%), and SMS (30%) were the most common means which teachers reported being invited to the training. All (100%) observed LGA and teacher training sessions had an attendance sheet.

To share information and keep participants engaged, trainers are encouraged to use a combination of methods. The most common methods during the teacher training were

³ Survey design required trainers to interview at least 3 participants, thus some monitors exceeded this minimum. This has been rectified in the 2020 surveys.

⁴ Three schools were replaced, two were not deworming, and one did not exist. All replaced schools were monitored.

⁵ On DD, monitors found parents in school during deworming in only 13 of 30 schools monitored.

⁶ Non-enrolled children were not available on Deworming Day in some of the monitored schools.

⁷ There were difficulties in locating households where all children aged 5-14 do not attend school.

⁸ Based on the WHO CES protocol, if a monitor visits a household and finds no target children, there should be no replacements made.

lecture based presentations (96%), discussion/participatory approach (89%), group work (59%). These were followed by demonstrations (33%), and role plays (33%).

4.1.1 Attendance during trainings

Given that LGA training size varies depending on the number of sessions in an LGA, expected attendance at LGA training is not available, however 68% of attendees were on time. On average, 34 teachers were expected to attend each teacher training, but only an average of 18 (70%) attended, representing 69% of expected schools. The noted attendance rate is 2 percentage points lower than that noted in the first round of 2019. Less than a half (44%) of teachers arrived after training had started. The main reasons for late arrival included late invitations (50%), school unawareness (30%), teacher unawareness (15%), and late communication on change of the venue or date (15%).

4.2 Topic coverage

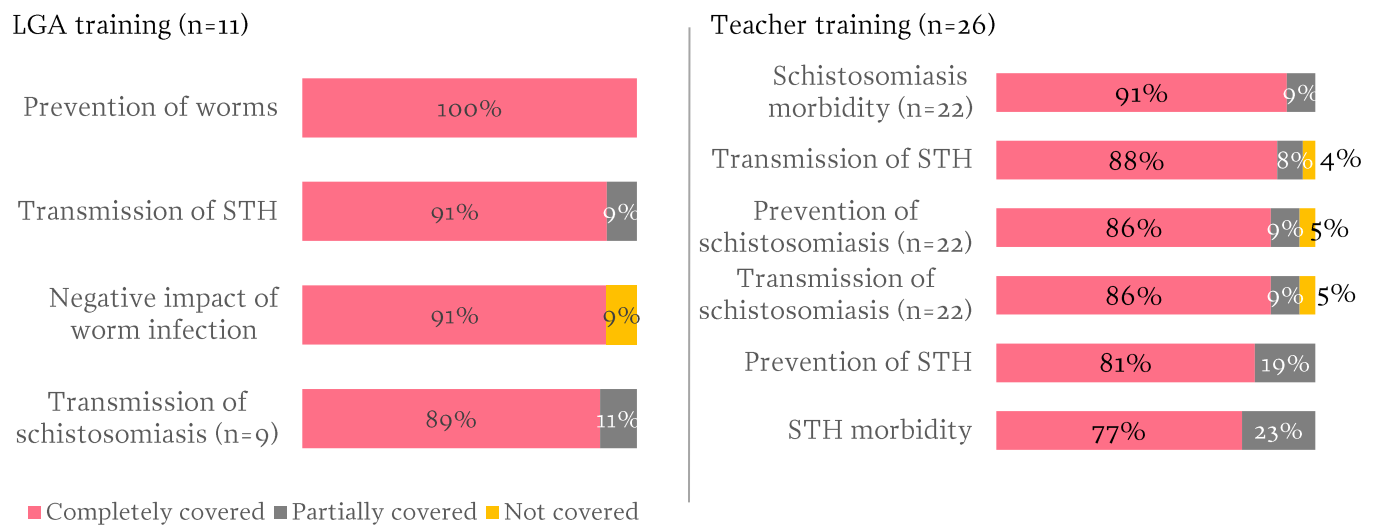
Seven topics are required to be covered in the training sessions, which are discussed in detail below. For the purposes of this report, the seven topics are compacted into five thematic areas. Monitors assessed the coverage of individual messages as well as participants' pre- and post-training knowledge levels.

During training observations, the monitors had a checklist with which to indicate if a topic was either covered completely, partially covered, not covered, or if wrong information was delivered. "Completely covered" means all the information and messages in a given topic were relayed. The sections below discuss coverage of key content that trainers should have delivered during training.

4.2.1 Information on worms and target population

The six messages regarding worms, include type of worm, transmission, prevention, morbidity, treatment, and benefits of deworming. However fewer messages were expected to be covered in the LGA trainings. Among these, only information on worm prevention received complete coverage in all (100%) LGA training sessions, while the negative impact of worms was not covered in 9% of LGA training sessions. During teacher training, information on schistosomiasis morbidity received complete coverage in at least 91% of the training sessions. However, complete coverage of the message on STH morbidity was restricted to only 77% of the teacher training sessions (Figure 1).

Figure 1: Messages covered under “worms” during LGA and teacher trainings



Post-training interviews revealed that all (100%) participants at the teacher trainings could cite the type of worms being treated. Additionally, in post-training, all (100%) respondents at teacher training could cite at least one way a child gets infected with worms, up 4 percentage points from pre-training interviews.

Ninety-one percent (91%) and 96% of trainers at the LGA and teacher training respectively covered the target group, which consists of all enrolled and non-enrolled children aged 5-14 years. Post-training, all (100%) of LGA training attendees and 98% of teachers cited correct target age-group for STH, up from 51% and 68% pre-training, respectively. Notably, all (100%) of LGA training attendees and 99% of teachers correctly mentioned the target age-group for schistosomiasis, up from 39% and 54% pre-training.

While all (100%) of LGA trainings and 93% of teacher trainings emphasized the importance of not deworming sick children, children with a history of certain health conditions⁹ were only mentioned in 30% LGA trainings and 81% of teacher trainings. Other eligibility exclusion factors in schistosomiasis focused trainings (children shorter than 94cm and any children under 5 years) were not mentioned in 30% of LGA training and 10% of teacher training. These messages are key to minimize the incidence of SAEs.

Post-training, while only 2% of LGA participants said that they would deworm sick children present during the MDA, 10% of teachers said they would deworm sick children, which is a potential concern.

⁹ These include epilepsy, sickle cell and central nervous disorders.

4.2.2 Drugs and Drug Administration

Aside from messages on drug storage and hand washing, which were covered in at least 73% of trainings, all other key messages were covered in 89% of all training sessions. Trainers seem to overemphasize aspects of drug administration as compared to preparatory activities (Table 3).

Table 3: Messages on drug administration covered during the trainings

MDA practice	Percent (Completely and partially covered)	
	LGA training (n=11)	Teacher training (n=27)
Schistosomiasis drug is praziquantel	100% (n=9)	100% (n=22)
Dosage for schistosomiasis is one to five tablets, depending on height	100% (n=9)	100% (n=22)
Ensure that the child has eaten prior to administration of praziquantel	100% (n=9)	100% (n=22)
STH drug is mebendazole	100%	100%
One mebendazole tablet to be given to each child	100%	100%
Register enrolled children prior to Deworming Day and non-enrolled children on Deworming Day, prior to treatment.	82%	100%
Under the program, all drugs are free, safe and effective	100%	96%
Under no circumstances should a child be forced to swallow the medicine	-	89%
Drugs must be stored in a clean, safe, dry and cool location	73%	78%
Facilitate hand washing prior to treatment	-	78%

From post-training interviews, participants in the LGA training knew the correct drugs, 92% for STH and 89% for schistosomiasis. Post-training knowledge of drugs used to treat STH and schistosomiasis was also high among teachers, with 96% and 94%, respectively. Similarly, participants from the LGA training knew the correct dosages, 95% for STH and 91% for schistosomiasis. Post-training knowledge on correct dosage for STH and schistosomiasis was also high among teachers, with 97% and 94% respectively.

Apart from knowing the drug type and dosage, it is important to carefully follow certain drug administration steps. Each individual drug administration step was described in at least 59% of teacher training sessions, with 85% covering them in the right order. **Table 4** lists steps, in the correct order, as completely or partially covered during training.

Table 4: Drug administration steps covered during teacher trainings (n=27)

Drug administration step	Completely covered	Partially covered	Not Covered
Step 1: Arrange the drug distribution site	70%	22%	8%
Step 2: Ensure necessary materials are available and are in place	78%	22%	-
Step 3: Provide orientation to the children	70%	22%	8%
Step 4: Organize children accordingly	67%	19%	14%
Step 5: Let the child wash his/her hands	59%	19%	22%
Step 6: Register the child if non-enrolled	85%	15%	-
Step 7: Use of tablet pole to measure children's height (n=22)	86%	14%	-
Step 8: Administer the mebendazole drug	89%	7%	4%
Step 9: Administer the praziquantel drug (n=22)	82%	14%	4%
Step 10: Complete registration in the treatment register	89%	11%	-
Step 11: Observe the child for any side effects	70%	30%	-

4.2.3 Side effects

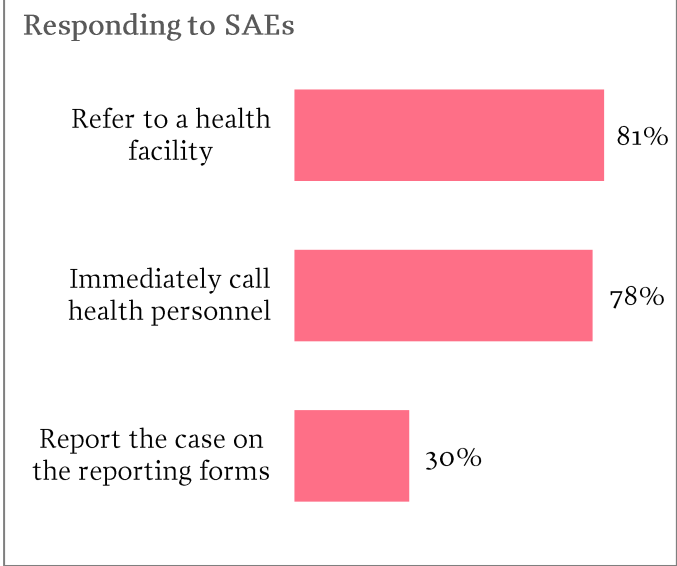
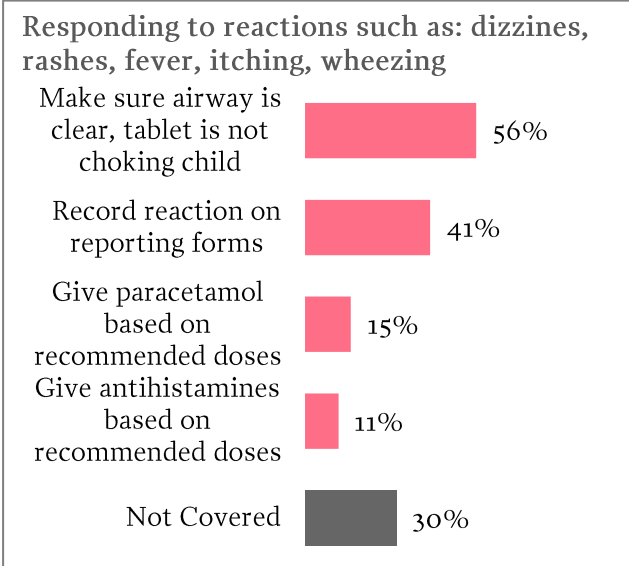
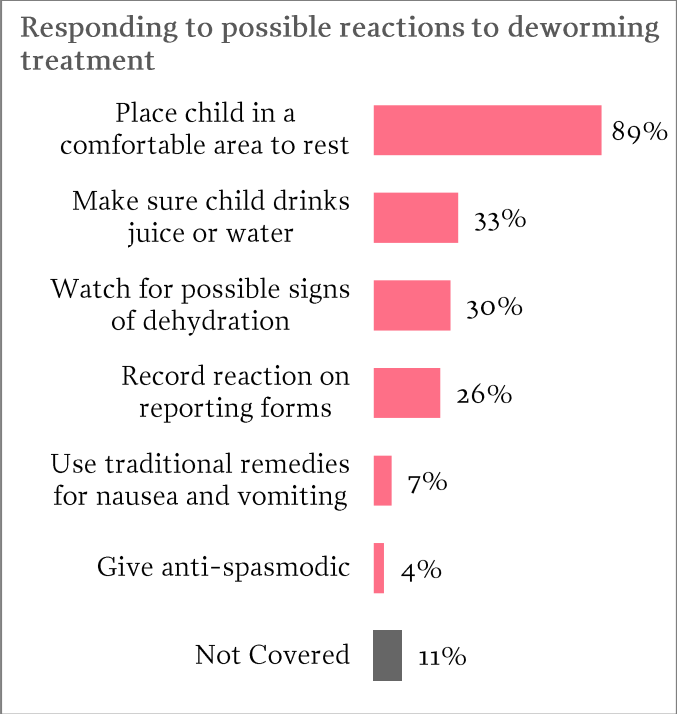
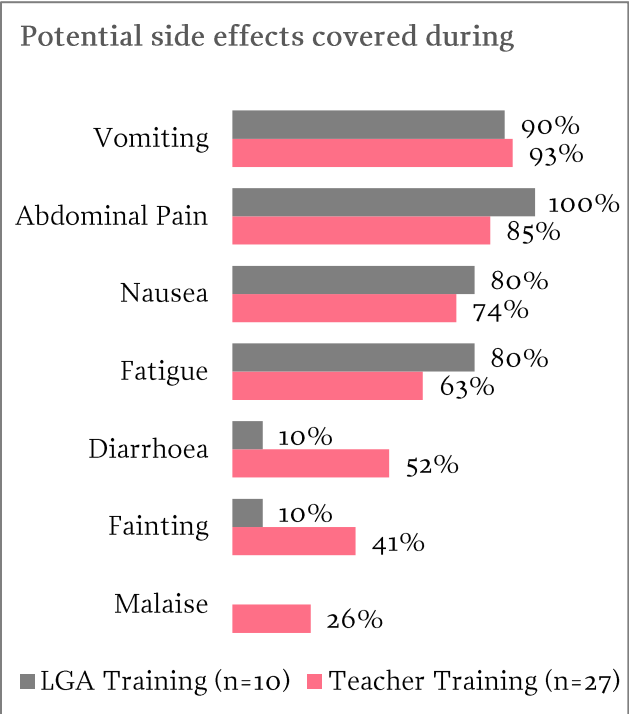
Trainers provided information on potential side effects and SAEs to prepare teachers to manage such situations. In both training types, abdominal pain and vomiting were most covered while malaise, fainting and diarrhea were least covered. Thirty percent (30%) of the LGA trainings did not provide participants with steps to take in the event of SAEs, and this information was not cascaded in 11% of teacher trainings (Figure 2).

Post-training, 91% of LGA attendees and 92% of teachers indicated that they would feed children prior to administering praziquantel so as to minimize potential side effects. Additionally, 97% of participants in teacher training could mention at least one side effect of schistosomiasis up from 59% in pre-training.

Further information on knowledge of potential side effects and SAEs covered in both LGA and teacher trainings, as well as the responses covered in teacher trainings is reflected in the Figure 2 below.

Figure 2: Messages on side effects¹⁰

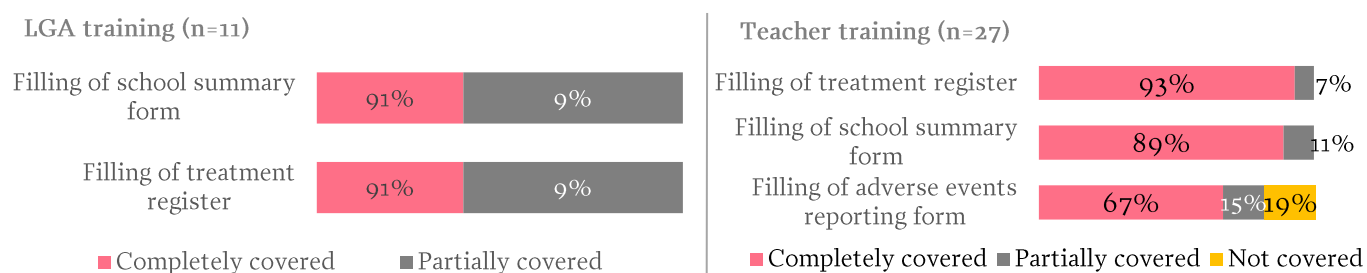
¹⁰ All messages were covered in both LGA and teacher trainings, although the observational tool for the LGA training omitted some of the highlighted messages



4.2.4 Recording and reporting forms

Teachers record the number of children treated at class and school levels, which emphasizes the need for the trainer to comprehensively cover this aspect. Trainers completely covered information on the school summary and treatment register forms in at least 89% and 91% of teacher and LGA training sessions, respectively. Practical sessions to fill both the treatment register and school summary form were held in 100% of LGA and 96% of teacher training sessions monitored (Figure 3).

Figure 3: Messages covered under recording and reporting forms



From post-training interviews, 95% of teachers correctly identified the treatment register as the primary form they would use to record treatments. However, 29% of participants did not name it as the source document for the school summary form.

4.2.5 Roles and Responsibilities

Overall, teacher roles and responsibilities during deworming were covered in most teacher training sessions, apart from mobilization of non-enrolled children. The coverage of the roles of frontline health facility staff and NTD coordinators were poorly covered. Table 5 below provides details.

Table 5: Key MDA roles and responsibilities of various actors covered at the trainings (n=27)

Roles and responsibilities	Percent
Key teacher roles	
Organizing drug administration	93%
Form recording and reporting	85%
Disseminating health education messages to children and parents	81%
Mobilization of non-enrolled children	67%
Key FLHF staff roles	
Managing side-effects	70%
Managing, referring and reporting any children with SAEs	63%
Participate in community awareness creation	56%
To communicate the rationale of the intervention to community leaders	52%
NTD coordinator and educational secretary roles	
Distributing appropriate quantities of drugs to teachers	52%
Receiving any unused drugs from the schools post-treatment	41%
Compiling the treatment coverage report	33%

From post-training interviews, 85% of teachers correctly identified the role of FLHF staff in the management of SAEs.

4.3 Distribution of drugs and materials

Trainers should receive key materials before training (drugs, reporting forms, tablet poles, and posters) to aid in teacher training sessions, as well as to pass on to teachers.

In most teacher training sessions (78%), drugs for both STH and schistosomiasis treatment were available before the sessions began, and were distributed in 85% training sessions. Most sessions had tablet poles (78%) before training started, with distribution to 82% of the teachers from schools in attendance. Distribution of reporting forms was also high, treatment registers in 96% and schools summary forms in 93% of training sessions. A teacher training handout was present and distributed in 96% of the training sessions.

On Deworming Day most schools (83%) had all the required drugs, reporting forms, and tablet poles, which points to a good supply chain for these key materials (Figure 4). Unfortunately, 17% of schools did not use the reporting forms to record treatment.

Figure 4: Availability of all key materials across the implementation cascade¹¹



From post-deworming interviews with head teachers, all (100%) indicated sufficiency of the initial drugs available. Of the 87% of schools with a drug surplus, 65% planned for a mop-up before returning drugs to the LGA, 31% of schools returned their surplus immediately, and 4% planned to distribute to teachers.

4.3.1 Community sensitization materials

Before the teacher training began, 89% of training sessions had posters available, but only 85% distributed them at the end of the session. On Deworming Day, 93% of schools had posters available, while 83% had the posters pinned, with head teachers reporting an average of 2 posters per school.

4.4 Community Sensitization

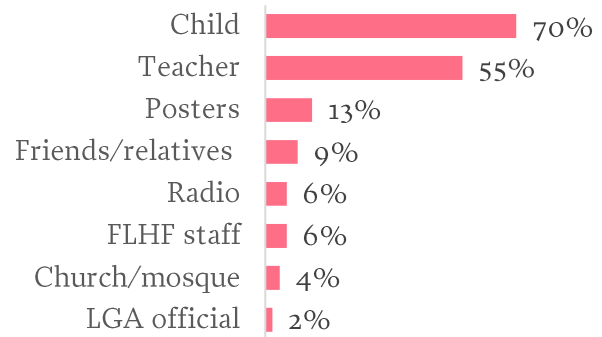
Community sensitization prior to Deworming Day is an evidence-supported factor critical for MDA success. On Deworming Day, monitors held interviews with 78 parents (60 of enrolled children and 18 of non-enrolled children) to gauge their awareness of MDA, as well as their sources of MDA information.

¹¹ All key materials include: drugs, and reporting forms (treatment registers and school summary form) and tablet poles.

4.4.1 Implementation of community sensitization

Only 60% of head teachers reported sending someone from the school to mobilize children in the community for the MDA. The majority of head teachers indicated that this was either a student (83%) or a teacher (78%); consequently, children (70%) and teachers (55%) were also the most common sources of Deworming Day information cited by parents (Figure 5).

Figure 5: Sources of Deworming Day information cited by parents



4.4.2 Community knowledge

Prior to Deworming Day, 74% of all parents, 90% of enrolled children and 22% of the non-enrolled children, were aware of Deworming Day. More parents of enrolled children had taken their children for deworming in the past, compared to those of non-enrolled children (71% vs 40%).

Knowledge of other key deworming aspects was generally low among parents aware of Deworming Day. Only 60% of the parents of enrolled children were aware of the target age-group for schistosomiasis, and only 67% of these parents were aware of the STH target age-group. Thirty-eight percent (38%) of parents were not aware of the type of worms being treated. Additionally, 77% of parents aware of Deworming Day indicated receiving messages encouraging them to feed their children before deworming, with 96% of these parents reporting that they complied.

At the end of these interviews, 94% of all of the parents that were aware of Deworming Day indicated that they would be sending their children for deworming (98% of parents of enrolled and 60% of parents of non-enrolled). The 6% of parents that would not be sending their children cited poor communication, lack of awareness, and that the children will be dewormed the next day. This low proportion is also a positive turnaround from the first year, first round implementation where parents refused to give consent for the treatment of their children in two of eight schools that did not deworm.

As part of the survey, parents were asked for their preferred methods of receiving future communication on deworming. Radio (92%), teachers (55%) and poster (38%) emerged as top preferences. Radio (100%) and poster (80%) were preferred sources of information among parents of non-enrolled children. While these methods were used during this round, they each reached not more than a third of the parents of the non-enrolled children (Figure 5).

4.5 Deworming Day

Thirty schools were monitored on Deworming Day, of which 87% were primary level, 10% were junior level, and 3% included both levels. By school type, 63% were public

while 37% were private. The purpose of the visit was to assess MDA procedures and interview the deworming team to assess their knowledge and capability to deliver the MDA.

4.5.1 Preparedness for Deworming Day

All (100%) head teachers interviewed had made plans to deworm, and all (100%) head teachers reported that either they or a teacher from the school had attended training within a month of the MDA, which contrasts the 69% school representation during the teacher training¹².

Monitor observations of school infrastructure revealed that 53% of schools lacked hand washing facilities and 10% of schools didn't have a toilet facility.

4.5.2 Deworming Day Delivery

Of the 30 schools that were originally sampled for Deworming Day monitoring, three schools were replaced due to various challenges. Two schools did not deworm and one school did not exist.

All twenty seven of the non-replaced schools and all three of the replacements conducted deworming on the designated day. Of the 32 schools that were found or could be assessed, 30 schools conducted deworming on the designated date, for a rate of only 94% that conducted deworming.

4.5.2.1 Adherence to MDA procedures

Adherence to recording treatment procedure was generally high (at least 80% of correct treatment recording). All schools gave the correct dosage of the mebendazole tablets to children and all teachers requested children to chew the tablet (Table 6). However, relatively high adherence (at most 93%) was noted for pre-deworming preparations. Instances of children being given drugs without asking if they were under medication were noted in 27% of schools, likely related to the 10% of teachers stating that they would treat sick children in post-training interviews.

Table 6: MDA procedures observed by monitors during drug administration (n=30)

MDA practice	Percent
Pre-deworming preparations	
Deworming team comprised of two teachers	93%
Health education messages were given to children prior to treatment	63%
Teachers ensured children washed their hands prior to treatment	33%
Drug Administration	
Teachers gave the correct dosage for mebendazole (1 tablet)	100%
Teacher asked child to chew the mebendazole tablet	93%

¹² The inconsistency is likely due to some schools sending teachers to mop-up trainings, which are not monitored, and also due to self-reporting.

Tablet pole was used to determine praziquantel dosage (n=24)	92%
Teacher asked if child was sick or under medication before administering medicine	73%
Spoilt tablets were properly disposed (n=16)	69%
Recording treatment	
All sections of the treatment register were filled out	83%
The treatment register was used to record treatment	83%
The teacher had transferred the names from the class register to treatment register prior to the deworming exercise	80%

Out of the 47% of schools that had handwashing facilities, only 57% ensured that children had washed their hands before deworming.

4.5.2.2 Management of side effects and referrals

Side effects were reported in six schools. These were related to vomiting, abdominal discomfort, and dizziness. All incidences of side effects were effectively handled. A referral to the local health facility was made in one of the cases.

4.5.3 Attendance Rate

All eligible children were treated in 70% of schools. Refusal by some parents (44%) or by children (44%) were the main reasons as to why some children were not dewormed. In 10% of the schools, there were reports of children being forced to swallow drugs, i.e. a child initially refused to take the drugs but the teacher insisted. Ninety-five percent (95%) of schools also took steps towards planning for absentees for treatment when they returned by recording their names on the treatment register.

While 73% of head teachers indicated that they had made plans to deworm non-enrolled children on Deworming Day, only 13% of the schools dewormed non-enrolled children, a statistic lower than the (20%) noted in the last round of deworming. Of the head teachers indicating that they did not have a plan to deworm non-enrolled children, 38% indicated non-enrolled children refusal to go to school, school management was against treating them (13%), non-enrolled children would not come on their own (13%), non-enrolled children were not informed (13%), presence of health facility nearby (13%), or drugs were only enough for enrolled children (13%).

5.0 Coverage Validation

Coverage validation was conducted in two randomly selected LGAs within Oyo state – Ibadan North and Olorunsogo, each treating both STH and schistosomiasis.

5.1 STH Results

Table 7 shows coverage validation findings for STH. A higher program reach¹³ was noted in Olorunsogo (94%) than in Ibadan North (79%), with the surveyed coverage¹⁴ for Olorunsogo also above the WHO coverage threshold of 75%, indicating a successful MDA in this LGA. While both LGAs for STH treatment had their reported coverage¹⁵ outside the confidence intervals of the surveyed coverage, the reported rates are still within 10 percentage points of this interval, indicating that reporting systems are working moderately well, but there is still room for improvement to guard against over/under reporting.

Table 7: Coverage validation results for STH

Category		Program reach			Survey Coverage			Reported coverage	Number of children interviewed
		Mean (%)	95% CI Lower Bound	95% CI Upper Bound	Mean (%)	95% CI Lower Bound	95% CI Upper Bound		
Overall									
Ibadan North		79%	76%	81%	71%	68%	74%	83%	865
Olorunsogo		94%	92%	96%	91%	89%	93%	79%	747
Disaggregation by gender									
Ibadan North	Male	79%	75%	83%	72%	68%	77%		428
	Female	78%	74%	82%	70%	65%	74%		437
Olorunsogo	Male	94%	92%	97%	91%	88%	94%		345
	Female	94%	91%	96%	92%	88%	94%		402
Disaggregation by enrolment status									
Ibadan North	Enrolled	80%	77%	83%	73%	70%	76%		830
	Non-enrolled	43%	26%	61%	26%	12%	43%		35
Olorunsogo	Enrolled	96%	94%	97%	94%	92%	95%		703
	Non-enrolled	68%	52%	81%	57%	41%	72%		44
Disaggregation by school type									
Ibadan North	Public	93%	90%	95%	84%	80%	88%		402
	Private	68%	64%	73%	62%	58%	67%		428
Olorunsogo	Public	96%	94%	98%	95%	93%	97%		528
	Private	95%	91%	98%	90%	84%	94%		175

¹³ Program reach- proportion of children offered the drug

¹⁴ Surveyed coverage - proportion of children interviewed who indicated that they swallowed the drug.

¹⁵ Reported coverage - proportion of children within the program area whom head teachers reported as having taken the drug.

Results disaggregated by gender were generally consistent with the overall findings. On the other hand, the program reach for public schools and enrolled children was higher than the reach for private and non-enrolled children respectively in both LGAs.

5.2 Schistosomiasis Results

Table 8 shows the coverage validation results for schistosomiasis. The program reach was higher in Olorunsogo (93%) compared to 66% in Ibadan North. The surveyed coverage in Olorunsogo also exceeded the recommended WHO coverage threshold of 75% for implementation success. Additionally, the reported coverage could not be validated by the surveyed coverage, which indicates a problem with reporting systems such as issues with data aggregation.

Table 8: Coverage validation results for schistosomiasis

Category		Program reach			Survey Coverage			Reported coverage	Number of children interviewed
		Mean (%)	95% CI Lower Bound	95% CI Upper Bound	Mean (%)	95% CI Lower Bound	95% CI Upper Bound		
Overall									
Ibadan North		66%	63%	69%	63%	60%	66%	77%	855
Olorunsogo		93%	91%	95%	93%	90%	94%	78%	745
Disaggregation by gender									
Ibadan North	Male	74%	70%	78%	64%	59%	68%		424
	Female	73%	69%	77%	63%	58%	67%		431
Olorunsogo	Male	97%	95%	99%	93%	90%	95%		343
	Female	96%	94%	98%	92%	89%	95%		402
Disaggregation by enrolment status									
Ibadan North	Enrolled	75%	72%	78%	65%	62%	68%		820
	Non-enrolled	37%	21%	55%	20%	8%	37%		35
Olorunsogo	Enrolled	98%	97%	99%	95%	93%	97%		701
	Non-enrolled	70%	55%	83%	52%	37%	68%		44
Disaggregation by school type									
Ibadan North	Public	88%	84%	91%	75%	71%	79%		396
	Private	64%	59%	68%	55%	51%	60%		424
Olorunsogo	Public	98%	97%	99%	96%	94%	98%		526
	Private	98%	95%	100%	91%	86%	95%		175

A similar proportion of schools (private vs public) were reached in Olorunsogo. The program reach for gender and enrolment status in both LGAs were also consistent with those for STH.

5.3 Reasons for non-compliance

Compliance rates (proportion of children who were offered the drug that swallowed it) were high in both LGAs – 99% for both STH and schistosomiasis in Olorunsogo, while at 97% for STH and 96% for schistosomiasis in Ibadan North. Figure 6 presents the reasons drugs were not given. The major reason reported was that the distributor did not come to the school.

Figure 6: Reasons drugs were NOT given

	Albendazole (n=294)	Praziquantel (n=340)
Distributor did not come to our school	52%	45%
Drugs finished	5%	2%
I was ill	6%	6%
I am taking other medications	4%	4%
I was too far away	5%	5%
Already took at school	1%	1%
I was not aware of any deworming in our community	11%	9%
Lack of parent/guardian consent	9%	8%
Fear of side effects	1%	1%
Had not eaten	1%	1%
Drug not administered in my class by the teacher	2%	3%
Told that not eligible given heights/age	1%	6%
Don't know	1%	9%

5.4 Unprogrammed deworming

Eleven percent (11%) of respondents (18% in Ibadan North, 3% in Olorunsogo) reported having been dewormed outside the scope of this MDA, within six months of Deworming Day. The majority took these from home (91%), while 4.5% took from a health facility and another 4.5% from a pharmacy.

6.0 Recommendations

6.1 What worked well

1. Post-training knowledge of information on worms, drugs and drug administration, and side effects was high (at least 89%) indicating effective training delivery by trainers.
2. The monitoring of LGA training sessions for the first time was successful, with data collected on key training observations and participant assessments. This provides more insight in the training of trainers for teacher training and can help to identify gaps that present during teacher training. The program should continue this monitoring and expand to other states in Nigeria during the next implementation.

3. Key steps of drug administration and the recording of treatments on Deworming Day were generally well performed, as exemplified in the scores for provision of the correct drug and dosage (100% for praziquantel and mebendazole). The six reports of side effects were well all handled, with teams noted to be knowledgeable.
4. Overall willingness to send children to school for deworming was very high (94%), albeit much higher among parents to enrolled children (98% vs 60%). This justifies the continued use of the cost effective options, particularly children and teachers in future rounds
5. The supply chain was largely effective; required materials (reporting forms, tablet poles and drugs) were available in 83% of observed schools on Deworming Day.
6. From coverage validation, the program reach in Olorunsogo for both treatments (STH and schistosomiasis) was high (at least 93%). In addition, surveyed coverage for both treatments was also high in Olorunsogo (at least 91%).

6.2 What can improve

1. Overall timely attendance of the LGA and teacher training was low (68% and 56% respectively), while the overall teacher attendance rate was also low (70%) low. To improve this, the program should review the methods of communicating to all stakeholders and encourage head teachers to promptly request teachers to make necessary preparations to attend the training.
2. Awareness of Deworming Day was 71% among all parents interviewed, however only 22% of parents of non-enrolled children were aware. The program should engage additional efforts to increase awareness of Deworming Day and understanding of key messages among parents of non-enrolled children. Potential measures could include the strategic and timely placement of posters in health facilities, timing and content in radio announcements, and encouraging elders to pass these messages during village barazas. These methods align with their preferred means of receiving information and might have a better reach.
3. There were a few cases in which monitors observed teachers forcing children to swallow the drugs on Deworming Day (10%) in that the child initially refused to take the drugs and the teacher insisted. The program should take immediate measures to ensure that training sessions emphasize that children should not be forced to take drugs if they do not want to, and to cover the implications (e.g. choking) to help prevent this in the future.
4. Several practices observed during MDA need to be addressed during future teacher trainings:
 - a. Hand washing before treatment - in spite of hand washing facilities being present in 60% of schools and emphasized in 78% of teacher training observations, compliance was only noted in only 57% of these schools.
 - b. Reporting forms - though most (at least 90%) schools had reporting forms available, 17% of schools did not utilize them.

- c. Exclusion criteria - for schistosomiasis treatment, key criteria such as height and age were not mentioned in 30% of LGA and 10% of teacher training sessions.
 - d. Non-treatment of sick children - in 27% of schools, teachers did not ask whether children were sick before administering mebendazole tablets. Additionally, in post-training interviews, 10% of teachers reported that they would administer drugs to sick children if present on Deworming Day.
 - e. Roles of FLHF staff and NTD Coordinators - coverage of the various roles of these deworming contributors were particularly low during teacher training sessions.
5. The program reach for schistosomiasis in Ibadan North was low, with the surveyed coverage consequently below the recommended 75% WHO threshold. This indicates a need to check if there were any supply chain issues at the LGA.
 6. Reported coverage could not be validated for either treatment types, in either LGA surveyed. The program should continue efforts to increase reporting quality to ensure that government treatment rates are accurate. In addition, reported coverage rates in Olorunsogo for both STH and schistosomiasis were at least ten percentage points below the surveyed coverage rates from coverage validation. As we generally expect validated coverage rates to be below those reported from schools, the program should review the reporting form aggregation in this LGA to determine if there were any errors.