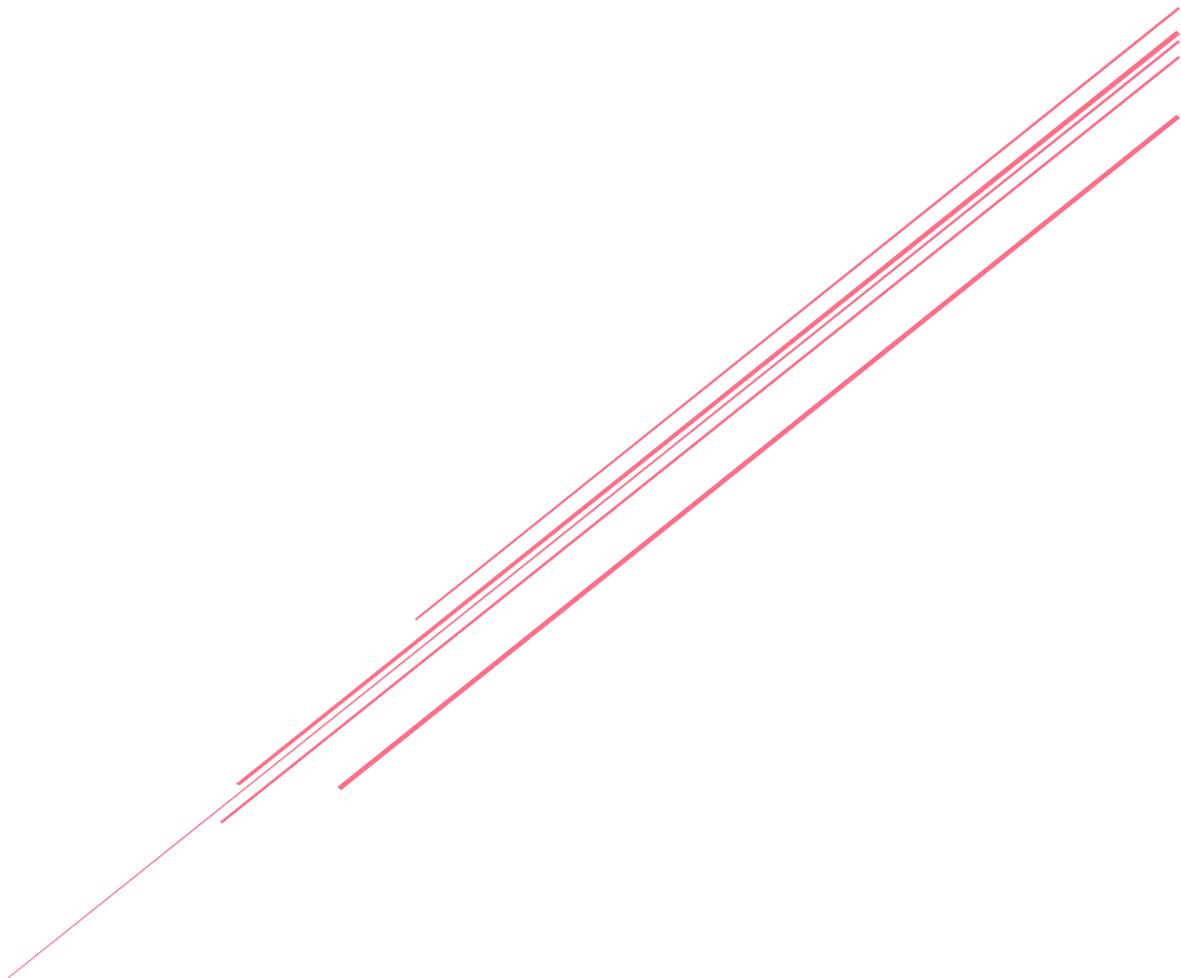


Evidence
Action

Deworm the
World Initiative

School-based Deworming in Oyo State, Nigeria

Process Monitoring Report,
February 2018



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The contribution of all other program stakeholders to the generation of this report including Infotrak Research and Consulting are highly appreciated.

Glossary

FLHF - Front line health facility	PC - Preventive chemotherapy
FMOH - Federal Ministry of Health	SAE - Severe adverse event
LGA - Local government area	STH - Soil-transmitted helminths
MDA - Mass drug administration	SMOH - State Ministry of Health
NTD - Neglected tropical disease	SUBEB - State Universal Basic Education Board
	WHO World Health Organization

1.0 Executive Summary

In February 2018, Oyo state neglected tropical diseases (NTDs) unit under the State Primary Healthcare Board (SPHCB) within the State Ministry of Health (SMoH) carried out school-based deworming of children aged 5-14 in 32 of 33 local government areas (LGA), according to endemicity for soil-transmitted helminths (STH) and schistosomiasis. STH-only treatment was carried out in four LGAs, schistosomiasis-only treatment in six LGAs, and both STH and schistosomiasis treatment in 22 LGAs. In total, 7,170 public and private primary and junior secondary schools were targeted for treatment.

To assess effectiveness of implementation and identify areas for improvement, Evidence Action designed data collection tools and a sampling method to observe and measure the quality of teacher training and deworming activities, and assessed the accuracy of treatment data reported by schools through a data audit following return of treatment data. Through a competitive selection process, Evidence Action recruited an independent firm, Infotrak Research and Consulting, to collect data from a sample of 76 teacher trainings, 95 schools, and 95 communities participating in school-based deworming.

Prior to deworming, teachers were trained to administer safe and effective drugs — mebendazole for STH and/or praziquantel for schistosomiasis by the LGA teacher trainers as trained by the State master trainers. Infotrak monitors observed 76 teacher training sessions, and found that required training materials were handed out in over 89% of trainings, except for the severe adverse event (SAE) protocol, which was given in 68% of trainings. Most trainers thoroughly covered content related to drug administration, reporting forms, and health education, though the level of detail varied. For instance, 62% of trainings gave instruction about where drugs should be administered within the school; 91% covered how to prepare the treatment register; and 93% instructed teachers to give tablets with water.

On Deworming Day, monitors visited schools and found that teachers adhered at varying levels to key procedures in drug administration. For instance, 92% of schools used the treatment register to record treatment, and in 88% of schools treating for STH and schistosomiasis, the teacher asked if the child was sick or taking medication before administering drugs. Non-enrolled children were present for treatment in 24% of schools. There were statewide rumors about children reacting badly to the medicines and other rumors about children dying after administration of medicine; this may have had an impact in that 90 (94%) of the 95 monitored schools administering the medicines on deworming day¹.

Awareness on Deworming Day was higher among parents of enrolled children (90%) than parents of non-enrolled children (68%). The key source of information for parents of enrolled

¹ The rumors on deworming day: On the deworming day, rumors broke out state-wide, originating from Saki LGA about children reacting to PZQ, unfortunately, in Surulere LGA, 2 out of 3 children from the same family who were all dewormed died on the deworming day, the death of these kids further worsened the situation as the news spread to neighboring LGAs. The LDA NTD coordinator, PHC coordinator, teachers from the children's school and the LIE were promptly arrested by the police. Investigation surrounding the likely cause of their death was conducted at a teaching hospital in a nearby LGA, and it was confirmed that the kids died of food poisoning resulting from consumption of fruits sprayed with herbicides. This has been established as the cause of their death and the case has since been closed. Unfortunately, the damage to the SBD which coincided with the period had been done.

children was their child, while most parents of non-enrolled children received deworming information via radio.

The data audit showed that only 11% of monitored schools had all entries in class treatment register within a 10% range of their corresponding school summary form entries. This percentage is higher (21%) when the elements in the school summary form were compared to corresponding state database entries. Error rates were also much higher at school level (26%-47%) as compared to the state level (19%-32%). While this points to more accurate transfer of data by the state data managers as compared to teachers at school level, there is a need for more capacity building at both levels on data management to lower the errors noted.

To ensure the quality of teacher trainings, all training materials should be made available to teachers in every session. To improve quality and ensure accuracy of treatment data, there is a need to strengthen reporting capacity at lower levels as well as ensure data validation is built into the reverse cascade.

2.0 Introduction

Parasitic worm infections such as STH and schistosomiasis interfere with children's nutrient uptake, causing anemia, malnourishment, and impaired mental and physical development. These symptoms pose a serious threat to a child's health, education, and economic potential. Infected children are often too sick or tired to concentrate in school, or to attend at all. Parasitic worms pose a massive threat to human capital, hindering schooling and economic development in parts of the world that can least afford it. School-age children typically harbor the highest intensity of infection from STH and schistosomiasis, and therefore the World Health Organization (WHO) and Nigeria's Federal Ministry of Health (FMOH) recommend large-scale school-based deworming to control these diseases. Evidence Action provides technical support to several Nigerian state governments working to eliminate the public health threat of worms through school-based deworming.

In February 2018, the Oyo State NTDs unit under the SPHCB of the SMoH conducted the first round of state-wide school-based deworming in 32 LGAs in the state according to their endemicity for STH and/or schistosomiasis. A mop-up treatment day was scheduled two days after the deworming day to provide deworming treatment to children who were sick, on medication or unavailable on deworming day to receive treatment. STH-only treatment was carried out in four LGAs, schistosomiasis-only in six LGAs, and both STH and schistosomiasis treatment in 22 LGAs. Enrolled and non-enrolled children aged 5-14 received deworming drugs in both public and private primary and junior secondary schools. School teachers received training to properly administer safe and effective deworming drugs — mebendazole for STH and/or praziquantel for schistosomiasis.

Independent monitoring was carried out with a number of objectives including the identification of any challenges arising in the implementation of the deworming exercise as well as informing the program on areas of improvement in future deworming rounds. Further, the data audits that form a part of the independent monitoring help validate the treatment data as reported by head teachers.

3.0 Methodology

Infotrak recruited 100 monitors and 20 supervisors, using pre-defined criteria, to monitor a random sample of 76 teacher training sessions, and 95 schools where deworming took place. Monitors were rigorously trained by Evidence Action in two batches of 50 monitors and ten supervisors each, for three days per cluster from September 25-27 and 28-30, 2017. The curriculum covered an overview of the national neglected tropical disease (NTD) program with emphasis on school-based deworming, the basics of conducting a survey/administering a questionnaire, paper and electronic survey tools, field logistics, and data collection protocols. All monitors took a pre- and post-training test to ensure they fully understood their roles, and to determine the level of knowledge retained during training. Post-training, monitors' knowledge increased by an average of 89% from baseline pre-test results and all monitors selected to participate in the exercise scored above 75% in the post-test.

Prior to Deworming Day, a one-day training on MDA was planned for teachers from all 7,170 targeted schools conducted by the LGA team (Education Secretaries, FLHF Staff, NTD Coordinators) trained by the State master trainers. Evidence Action used stratified sampling² to randomly select 76 of the 363 teacher training sessions, and 95 of the 7,170 targeted schools for observation. Through observation guides and questionnaires, independent monitors assessed the quality of teacher trainings, as well as implementation of deworming. The sample size was determined to ensure a 95% confidence level and a 10% margin of error.³

Out of the 95 schools targeted for monitoring, data was collected from 90 schools. Five schools did not deworm as they were deterred by statewide rumors of children either reacting badly to medicines or in some instances claims that children were dying after administration of medicines.

Parents residing in areas around the selected schools were interviewed one day prior to deworming to gauge their level of awareness of the program. Monitors interviewed 564 parents: 285 parents of enrolled children and 279 parents of non-enrolled children.

On Deworming Day, monitors interviewed teachers regarding their plans for deworming, their treatment knowledge, and any sensitization activities that were carried out in schools and local communities. Monitors then observed the drug administration process to understand whether the required deworming procedures were followed⁴. Following treatment, monitors randomly selected and interviewed one parent, one head teacher, one teacher, two enrolled children and one non-enrolled child participating in the school deworming exercise. In total, the monitoring teams interviewed 79 parents (present during deworming), 90 head teachers, 90 teachers, and 204 students (25 non-enrolled and 179 enrolled children consented to interview).

² The teacher training centers are grouped by LGA (each LGA being a strata) and a proportionate random sample selected to be monitored from each strata.

³ A confidence interval of 90% calculates such that if the same population is sampled on several occasions and interval estimates are made on each occasion the resulting intervals would cover the true population parameter in approximately 90% of cases.

⁴ Monitors were advised not to interfere with the drug administration exercise but note down if procedures were not being adhered to and in dire cases (e.g., misadministration of drugs) notify the LGA team via his/her supervisor.

Finally, five days after deworming, monitors visited the schools again to carry out a data audit by collecting data from the class treatment register and school summary forms. This was compared to data received at the state level, to assess for accuracy.

Table 1. Methodology: Process Monitoring Review

Monitoring activity	Total population/ number	Target sample size	Actual sample size
Teacher training sessions	363	76	76
Schools targeted for monitoring on deworming day	7,170	95	90
Schools targeted for treatment with mebendazole only	1,004	-	14
Schools targeted for treatment with praziquantel only	751	-	8
Schools targeted for treatment with both mebendazole and praziquantel	5,294		68
Parents interviewed before Deworming Day	-	570	564
Enrolled children interviewed	-	190	179
Non-enrolled children interviewed	-	95	25
Head teachers interviewed	7,170	95	90
Teachers interviewed	9,436	95	90
Parents interviewed	-	95	79
Data audit	7,170	95	94

4.0 Results

4.1 Review of teacher training

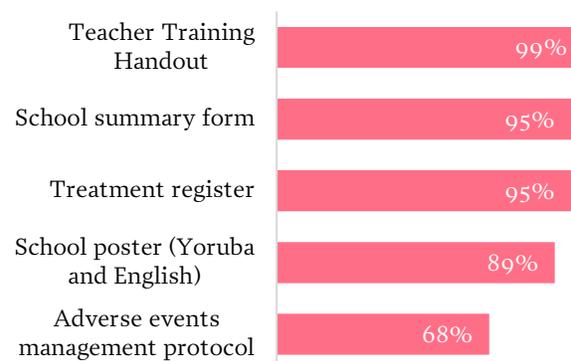
4.1.1. Attendance during trainings

The monitors recorded attendance at 76 teacher trainings. The attendance ranged from four to 55 participants in training, with an average of 21 participants recorded at the end of the training sessions. The expected number of teachers per training in each cluster was determined based on the enrolment Figures per school; with two teachers expected from schools having more than 200 children and 1 from those having fewer than 200 pupils. While it was not immediately possible to ascertain the exact range of expected participants for some of the trainings based on this arrangement, the expected attendance ranged from 20 to 60 participants.

4.1.2 Access to training materials

In 99% of monitored trainings, teacher handouts were distributed. The handout is used as guide by teachers when organizing and conducting treatment. School summary forms and treatment registers were distributed in 95% of trainings, and school posters in 89% of trainings. The SAE management protocol was distributed least frequently during the training sessions, observed in only 68% of trainings (**Figure 1**). However, the SAE management protocol is also a required material for both training and Deworming Day.

Figure 1. Materials given to teachers at teacher training sessions (n=76)



4.1.3 Training topics covered

Training topics were divided into seven areas: information on the worms treated; transmission of worms; target population for treatment; drugs and materials used for deworming; types of side effects and management of SAEs; recording and reporting forms; roles and responsibilities of the various actors on Deworming Day; and community sensitization.

Figure 2 shows that most training topics were completely⁵ covered in 90% of trainings, though some subject areas received less focus. Trainings most thoroughly covered topics related to drugs and materials in comparison with health education and forms. Over 90% of the trainers completely covered all topics related to drugs and materials, with the exception of drug storage, which was completely covered by 76% of trainers.

More than 80% of observed trainings completely covered content related to health education. Definitions of STH and schistosomiasis were covered most by trainers.⁶ More emphasis was placed on procedures for completing the class treatment register and school summary form, compared to the procedures for submitting school summary forms, the SAE protocol, and SAE reporting forms (**Figure 2**).

⁵ The term “completely” means that the trainer covered the prescribed content of the topic according to the training manual and presentations

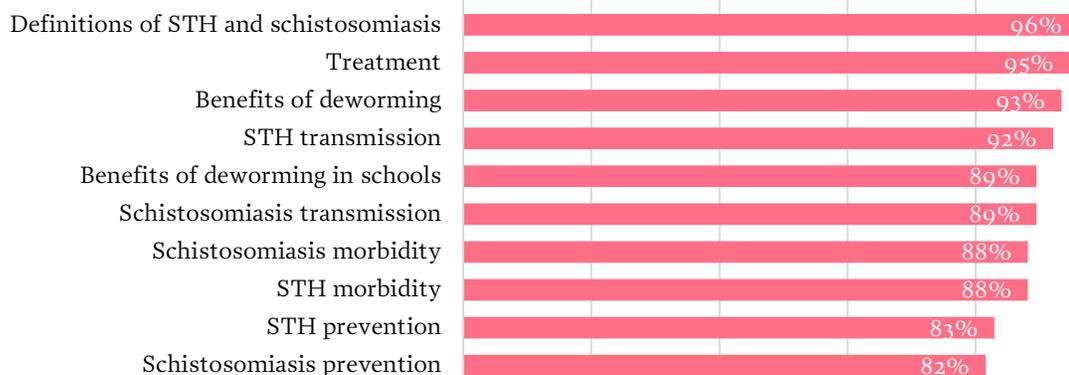
⁶ The program instructed trainers to train teachers on both types of worms targeted by the deworming campaign irrespective of the type of treatment conducted in the LGA.

Figure 2. Completely covered topics across training sessions on drugs and materials, health education, and forms (n=76)

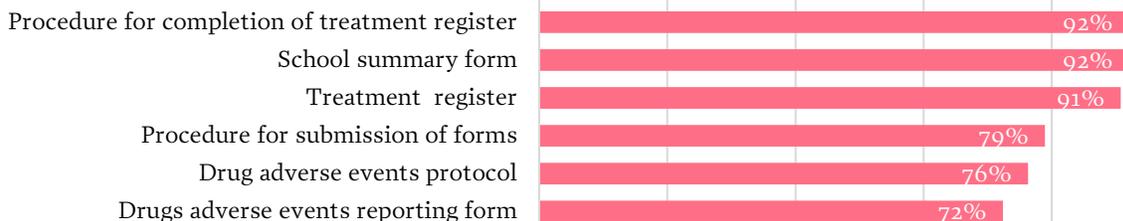
Drugs and materials



Health education



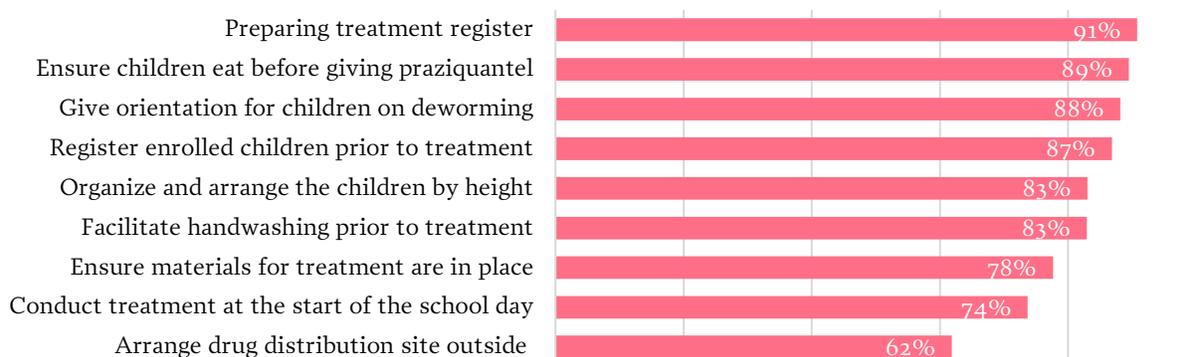
Forms



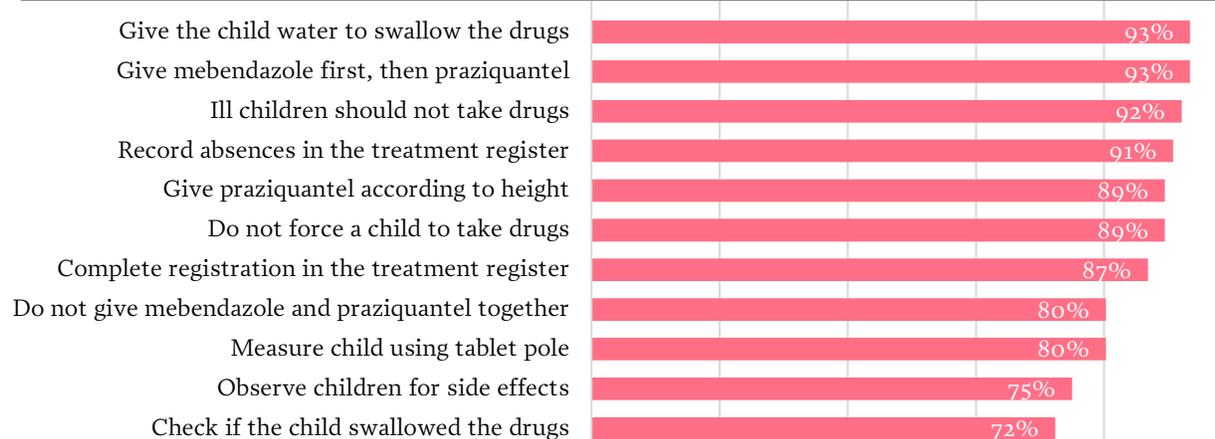
Coverage of specific procedures in preparation for drug administration varied considerably (**Figure 3**). Drug distribution sites at schools was covered in only 62% of trainings while preparing the treatment register was covered in over 91% of trainings. Checking to see if the child swallowed drugs was covered in 72% of trainings, and giving drugs with water was covered in 93% of trainings.

Figure 3. Completely covered topics across training sessions on preparing for MDA, and what to do during and after MDA (n=76)

Preparation for drug administration



During and after drug administration



4.1.4 Training methods used

The majority (97%) of trainers used lecture-based approaches for delivering the training topics. In addition, 74% of trainers held discussions, 48% led demonstrations, 11% administered group work, and 7% used role play.

Monitors observed administration of a pre-test in 86% of trainings, and a post-test in 88% of trainings. An analysis of participants completing both a pre and post-test as reported by the state showed an average pre-test score of 46%, and post-test average score of 79%. Five percent (5%) of teachers who took the pre-test indicated that they had attended a school-based deworming training previously.

4.1.5 Teacher roles and responsibilities

Trainers covered the roles of different actors in the deworming process, including NTD coordinators, education secretaries, frontline health facility (FLHF) staff, and teachers. Teachers were trained on their multiple roles in the process, with an emphasis on organizing drug administration and completing forms (Figure 4).

During trainings, teachers were also taught about their role in community sensitization. The trainings mainly covered the role of displaying posters in the school, discussing deworming at school management meetings and encouraging children to share Deworming Day information with their parents and conducting health education in class. (Figure 5). During the training, 64% of trainers discussed the need for teachers to join in efforts to sensitize community members about the deworming program.

Figure 4. Teachers' roles in deworming covered during training sessions (n=76)

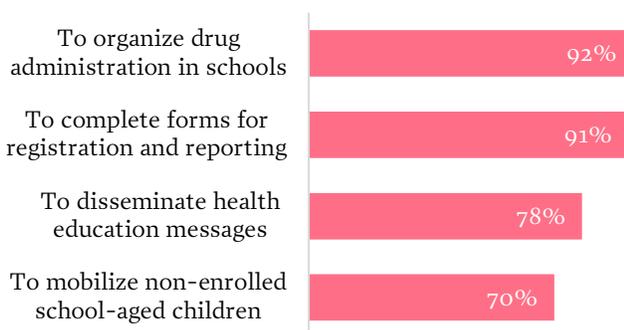
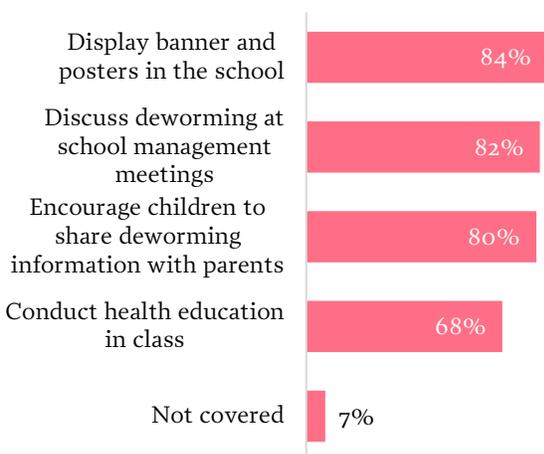


Figure 5. Teachers' roles in sensitization covered during training sessions (n=76)



Trainers also covered the roles of other key actors in deworming. The most common roles defined for FLHF staff were managing, referring, and reporting SAEs, or managing side effects directly. The main sensitization roles defined for FLHF staff were to discuss Deworming Day and objectives with community leaders and contiguous communities. The main roles explained for both NTD coordinators and education secretaries were to store drugs in a proper facility until the next round of treatment, and to compile treatment coverage reports (see Table 2).

Table 2. Trainer explanation of the role of health and education staff in the deworming program

The role of FLHF staff in the deworming program (n=76)	Percentage
To manage side effects	76%
To manage, refer, and report children with SAE	75%
To communicate the rationale of the intervention to community leaders	49%
Not covered	9%
The responsibility of FLHF staff in community sensitization and mobilization (n=76)	Percentage
Discuss Deworming Days and objectives of deworming with community leaders	49%
Discuss Deworming Days and objectives of deworming with contiguous communities	47%
Mobilize the community leaders for house-to-house sensitization	36%
Not covered	22%
The role of the NTD coordinator and Education Secretary in the deworming program (n=76)	Percentage
To store the drugs in a proper storage facility until the next round of treatment	43%
To compile a report about the treatment coverage in the LGA as a whole	43%
Not covered	22%

4.2 Deworming day assessment

4.2.1 Teachers trained for Deworming Day

Prior to Deworming Day, monitors visited 95 randomly sampled schools, of which 90 reported plans to carry out deworming. Sixty-eight (68) schools treated for both schistosomiasis and STH, 14 for STH only, and 8 for schistosomiasis only. Monitors interviewed the head teacher to assess school preparedness⁷. Head teachers were asked to indicate which materials they received from the program. Over 80% of head teachers could present all required materials, except for the SAE protocol. Of the head teachers interviewed, 96% mentioned that the teacher training handout was used for their sensitization, and 76% used it as a reference when organizing and conducting deworming. All 90 schools were visited again on Deworming Day for monitors to assess MDA procedures and interview the deworming team (i.e., head teacher and a health teacher/one teacher assigned to oversee the MDA) to assess their knowledge and capability to deliver the MDA⁸.

Seventy-three percent (73%) of interviewed head teachers had attended a training session prior to deworming, while 27% did not attend but sent another teacher, indicating that all sampled schools received training.

⁷ Monitors did not notify head teachers during the pre-Deworming Day visit that they would return for monitoring on Deworming Day.

⁸ Due to a sampling error, the same schools were visited pre-MDA and during MDA. This will be corrected in future rounds to reduce the potential for observation bias.

4.2.2 Deworming team knowledge

On Deworming Day, monitors asked one teacher in each school's deworming team⁹ if they had received any training prior to deworming. Ninety-seven percent (97%) indicated that they had indeed received some training with majority (79%) of them citing that this was through attending the training, while 21% indicated that they were sensitized by a teacher who attended the training.

Ninety-nine percent (99%) of teachers knew that the correct age group for treatment was between 5-14 years old. Across all 82 monitored schools treating either STH or STH and schistosomiasis, all teachers interviewed on Deworming Day knew that the correct drug for STH treatment was mebendazole, and 99% knew the correct dosage. Teachers interviewed had knowledge of STH transmission channels, most commonly washing hands before eating (83%), not washing hands after using the toilet (80%), and walking in bare feet (77%) (Figure 6).

Figure 6. Teachers' knowledge of how children get infected with STH ($n=82$)¹⁰



Across all 76 schools treating for schistosomiasis, 99% knew the correct drug for schistosomiasis treatment, and all teachers knew that dosage was determined according to the dose tape. Ninety-six percent (96%) of teachers knew that infection spreads by contact with contaminated water. It is important that teachers be aware of all causal factors in worm transmission and prevention.

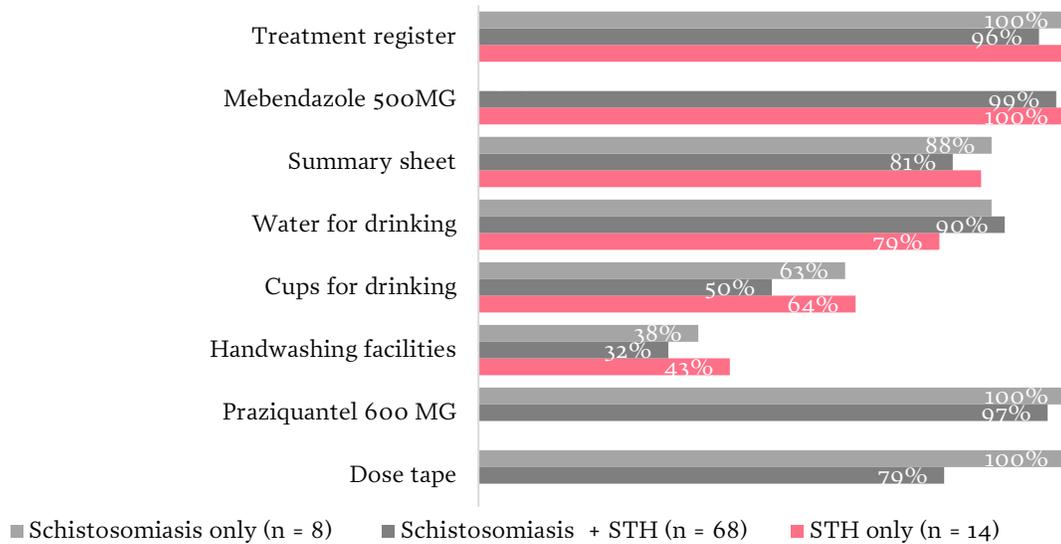
4.2.3 Materials received and used for deworming

On Deworming Day, monitors found the majority of required materials, including treatment registers, drugs, and summary sheets, present at schools regardless of whether the required treatment was for STH, schistosomiasis, or both (Figure 7).

⁹ The deworming team in each school are teachers who were trained to deworm or support to deworm school children on deworming day

¹⁰ A subset of the sampled 95.

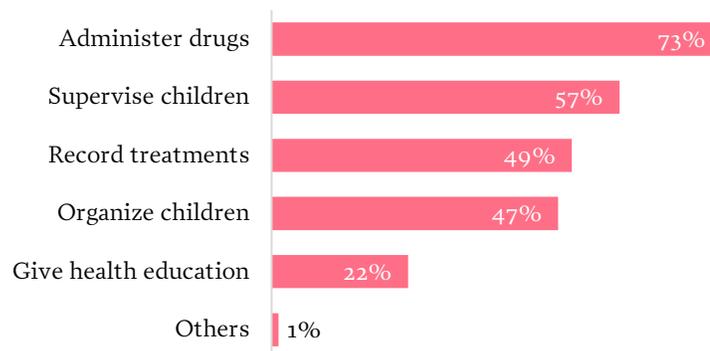
Figure 7. Materials observed on Deworming Day by the monitoring team at schools



4.2.4 Teacher roles on Deworming Day

Monitors asked teachers to define their roles and responsibilities during Deworming Day. As in **Figure 4**, teacher responses largely reflected those given by their trainers (**Figure 8**).

Figure 8. Teachers' perceptions of their roles during Deworming Day (n=90)



4.2.5 Drug administration procedure for deworming

Monitors observed whether deworming teams adhered to key procedures. **Table 3** shows that, across schools, teachers followed the correct drug administration procedures, with slight variations per treatment strategy. For example, in 88% of schools treating for STH and schistosomiasis, the teacher asked if the child was sick or under medication before administering medicine. This occurred in 79% of schools treating for STH only, and 75% for schistosomiasis only.

Monitors observed a low percentage (13%-43%) of teachers ensuring that children washed their hands prior to treatment (**Table 3**). During observations, 67% of schools did not have hand washing facilities, which can explain this low occurrence.

Table 3. MDA procedures observed by monitors during drug administration

MDA procedures for STH only (<i>n</i>=14)	Percentage
Teachers gave the correct dosage for mebendazole (1 tablet)	100%
Teachers asked children to chew the mebendazole tablet	100%
Teachers asked if child was sick or under medication before administering medicine	79%
Teachers ensured children washed their hands prior to treatment	43%
MDA procedures for STH + schistosomiasis (<i>n</i>=68)	Percentage
Teachers gave the correct dosage for mebendazole (1 tablet)	100%
Child swallowed praziquantel with drinking water	96%
Teachers used a dosing tape or make-shift dose tape to determine praziquantel quantity for each child	94%
Teachers asked children to chew the mebendazole tablet	93%
Teacher asked if child was sick or under medication before administering medicine	88%
Teachers broke up praziquantel tablets into smaller pieces for younger children	82%
Teachers ensured children washed their hands prior to treatment	29%
Teacher gave the deworming medicine to sick children	1%
MDA procedure for schistosomiasis only (<i>n</i>=8)	Percentage
Children swallowed praziquantel with drinking water	100%
Teachers used a dosing tape or make-shift dose tape to determine praziquantel quantity for each child	98%
Teachers broke up praziquantel tablets into smaller pieces for younger children	88%
Teacher asked if child was sick or under medication before administering medicine	75%
Teachers ensured children washed their hands prior to treatment	13%
Teacher gave the deworming medicine to sick children	13%

4.2.6 Treatment procedure for deworming

Teachers' adherence to correct treatment procedures varied. At 92% of schools observed, teachers recorded names in the treatment register and filled out all required sections of the register on Deworming Day.

Sixty-eight percent (68%) of schools noted absences on Deworming Day, and appropriate usage of treatment registers made it easier for teachers to track absent students and effectively follow up for mop-up day. Spoiled tablets (e.g. fell on floor, water spilled on tablet, child spit out) were observed in 58% of monitored schools. Of these, 77% of observed cases disposed of spoiled tablets correctly.

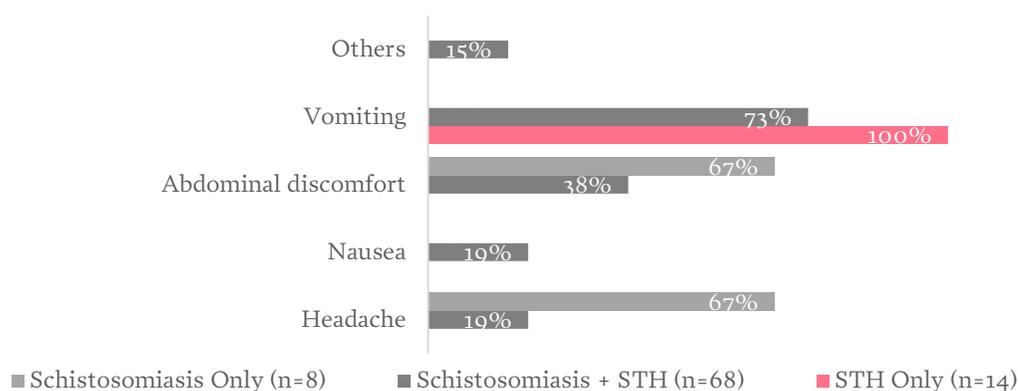
Table 4. MDA procedures observed by monitors during deworming (n=90)

MDA procedure	Percentage
Treatment register was used to record treatment	92%
Teachers recorded names in the treatment register as tablets were administered	92%
All sections of treatment register were completely filled out	92%
Deworming team comprised of two teachers	89%
The teacher transferred the names from the class register to treatment register prior to the deworming exercise	87%
Spoiled tablets were properly disposed of by teachers (n=52)	77%
Health education messages given to children prior to treatment	68%
Schools that noted student absence for possible treatment when they return (for mop-up day)	68%
Children were organized and treated by class	64%
Teachers properly recorded non-enrolled children in the treatment register (n=39) ¹¹	56%
Schools where all students eligible for deworming and present on Deworming Day were treated	48%

4.2.7 Managing side effects

Monitors asked head teachers, prior to Deworming Day, about their plans to handle side effects and SAEs. Eighty-three percent (83%) of headmasters interviewed said that FLHF staff should manage children with side effects following treatment. In the 76 schools treating for schistosomiasis monitored, all head teachers (100%) attested to having requested children eat breakfast before treatment to avoid side effects.

Figure 9. Side effects seen by teachers after treatment



Monitors observed side effects in 33% of schools visited. This aligns with teachers' reports, indicating that 28% encountered side effects. Among schools where side effects were seen, monitors directly observed treatment in 57% of the sites: 7% of schools sent children to the

¹¹ This percentage is derived from 39 schools of 90 monitored where non-enrolled children were present for treatment.

local health facility for treatment, but as reflected in Figure 9, side effects were mild and most did not require specialized attention.

4.2.8 Inclusion of non-enrolled children

The deworming program treats both enrolled and non-enrolled children. Nineteen percent (19%) of head teachers reported having more non-enrolled than-enrolled children attend the deworming exercise. Twenty-two percent (22%) of schools monitored planned to treat non-enrolled children and enrolled children together at the same time as per instructions during training; 21% planned to treat them separately from enrolled children but at the same time, while 20% said separately and at a different time. On Deworming Day, 24% of schools had non-enrolled children present for treatment and 41% of them treated non-enrolled children at the same time as enrolled children. The program design is to treat both enrolled and non-enrolled children at the same time and document treatment of non-enrolled children on the back pages of the treatment register.

4.2.9 Head teacher post-deworming interview

Upon completion of deworming, 99% of interviewed head teachers found Deworming Day to be a success. Ninety-eight percent (98%) had sufficient drugs, and 93% of head teachers had extra tablets left over. Of the teachers with leftover drugs, 54% planned to keep these for a planned mop-up day before subsequently returning any balances to the FLHF, while 45% planned to immediately return balances to the FLHF given there were no planned mop-up activities, as per program strategy that drugs should be returned to FLHF within five days after mop-up.

4.3 Community sensitization

4.3.1 Sensitization of children before deworming

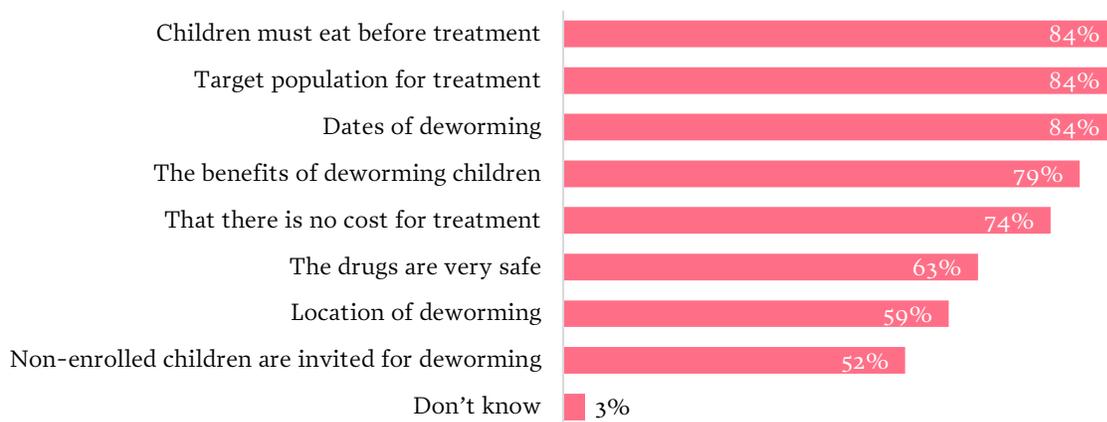
One day prior to deworming, monitors visited 102 schools to assess preparedness. However only 94 schools were successfully monitored¹². Eight schools were not interviewed due to the following reasons: two schools were no longer in existence, parents refused to give their consent in two schools, head teachers were not aware of the deworming exercise in three schools, and the last school reported ethnic clashes in the area. Of the 94 schools where deworming was scheduled, 83% sensitized children in the community prior to Deworming Day. The main sensitization method was through teachers (52%), followed by other children (26%).

4.3.2 Community sensitization reported by head teachers

Monitors asked head teachers which messages had been shared with community members; they most frequently responded with the need for children to eat prior to deworming, target population for treatment, and dates of deworming (**Figure 10**).

¹² Monitors were asked to note schools that would not be participating in the deworming exercise and then replace with a school near the sampled school. The CMS survey to be administered checks for preparedness for deworming and if the school isn't going to be deworming the survey questions would then not apply to them.

Figure 10. Topics shared with community members by headmasters (n=90)

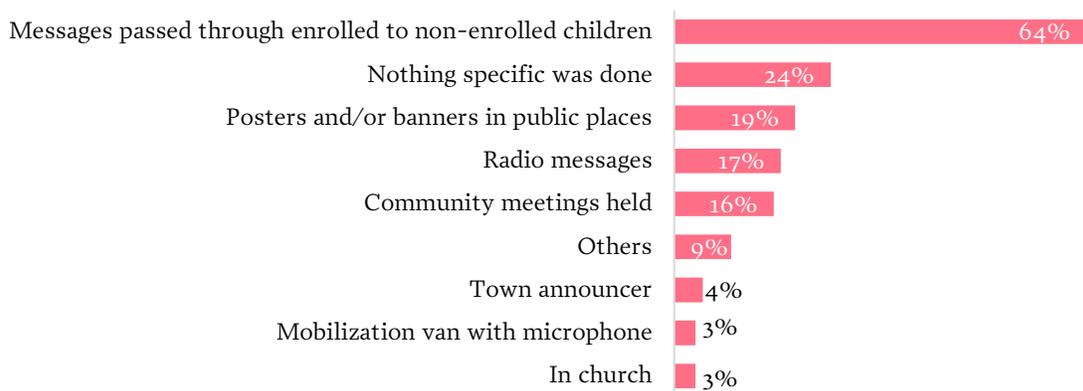


During MDA, monitors asked teachers in 90 schools who they shared information with regarding deworming. Teachers said that beyond students, they spoke to parents (87%), 16% to community leaders, 7% to church members, 4% to friends or neighbors, and 2% to school management or teachers. Only 9% of teachers spoke to no one else about deworming. Since community mobilization is not always teachers' main focus, the program needs to more effectively instruct teachers in strategies for reaching out to community and religious leaders to increase their role in mobilizing children — especially non-enrolled children in the community.

Monitors asked head teachers how non-enrolled children and their parents were sensitized on deworming. Sixty-four percent (64%) indicated that enrolled children passed messages to non-enrolled children. Other responses included using radio messages and posters in schools (Figure 11).

Monitors also asked head teachers what they would do if they experienced a low turn-out of non-enrolled students for treatment. Thirty-three percent (33%) mentioned that they would ask enrolled children to invite them for deworming; 18% planned to extend the deworming period and go into the community to mobilize them; and 14% indicated they would consult with the LGA coordinator to find out what to do. Thirty-four percent (34%) did not know what to do, suggesting a need for the NTD program team to create a clear plan of action for schools to engage non-enrolled students.

Figure 11. Headmasters' sensitization efforts for non-enrolled children (n=90)



4.3.3 Sensitization as reported by parents

Prior to deworming, monitors interviewed 564 parents, including 285 parents of enrolled children, and 279 parents of non-enrolled children. Broadly, parents of enrolled children were more aware of deworming day: 90% of parents of enrolled children knew that children would be dewormed in the next week, compared to 68% of parents of non-enrolled children. Ninety-two percent (92%) of parents of enrolled children planned to send their children for treatment, compared to 72% of parents of non-enrolled children. Most parents of enrolled children received information through their child, followed by a teacher. Parents of non-enrolled children received information from different sources: mostly radio, followed by a teacher (**Figure 12**).

On Deworming Day, monitors assessed parents' knowledge on ways children become infected with worms. **Figure 14** shows that more than 50% of parents knew that eating without washing hands, not washing hands after using toilets, and moving around with bare feet causes infection. Fewer than half of parents reported other causes such as having long and dirty nails, consuming vegetables and fruits without washing, and not using sanitary latrines.

Figure 12. Sources of deworming information mentioned by parents prior to deworming

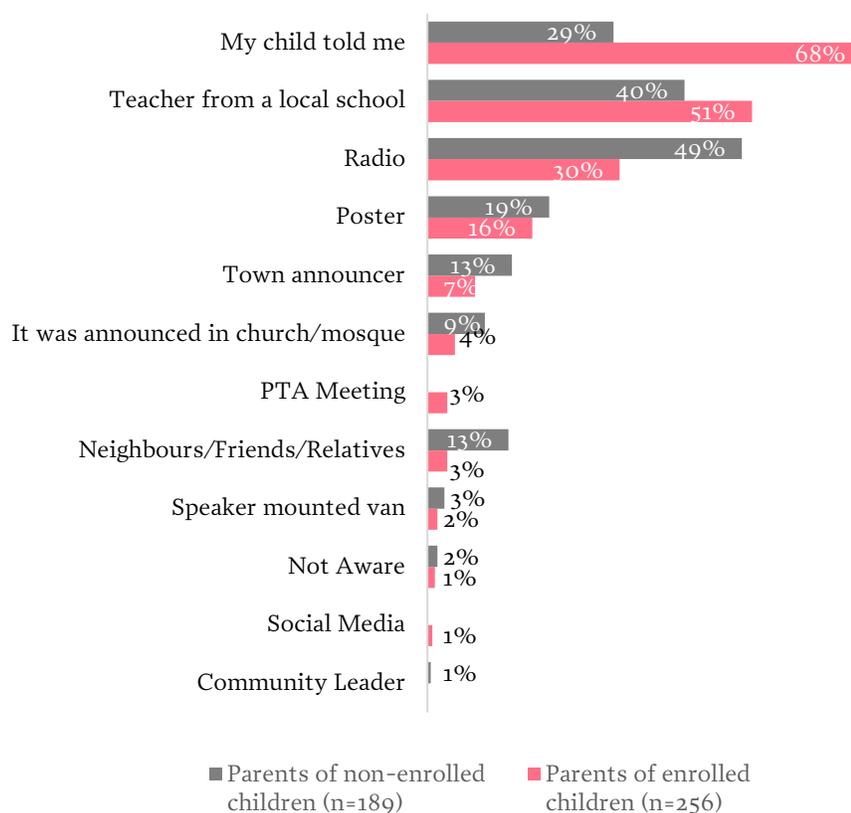


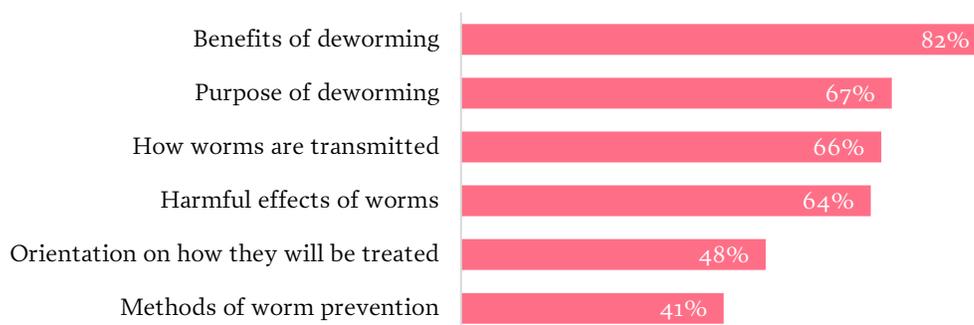
Figure 14. Ways of getting infected by worms mentioned by parents during deworming (n=71)



4.3.4 Student sensitization

Monitors observed 73% of schools delivering health education messages to children on Deworming Day. In these messages, teachers focused on the benefits of deworming, purpose of deworming, and how worms are transmitted. Prevention methods were less frequently covered (**Figure 15**).

Figure 15. Health messages conveyed to children prior to treatment (n=61)



Monitors aimed to interview two enrolled children per school, and spoke with 179 consenting enrolled children on Deworming Day against the planned 180. They also targeted one non-enrolled child per school, but due to the low numbers present on Deworming Day, monitors only interviewed 25 non-enrolled children.

Eighty-three percent (83%) of enrolled children knew the tablets they were given were for worms, compared to 74% of non-enrolled children. Ninety-seven percent (97%) of enrolled students told their parents about deworming, and 91% of non-enrolled children did the same. **Figure 16** shows that class teachers were the most common source of information for enrolled children, while non-enrolled children mainly heard about deworming through enrolled pupils and friends. Seventy-three percent (73%) of enrolled children knew how worms are prevented, compared to 34% of non-enrolled children. Prevention measures listed by enrolled children are in **Figures 17a and 17b**.

Figure 16. How enrolled and non-enrolled children heard about deworming

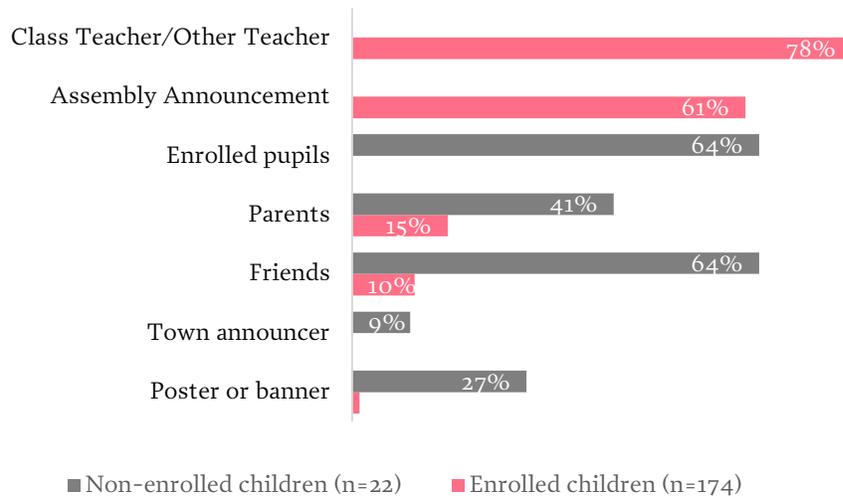


Figure 17a. Enrolled children's knowledge on how to prevent worm infection (n=123)

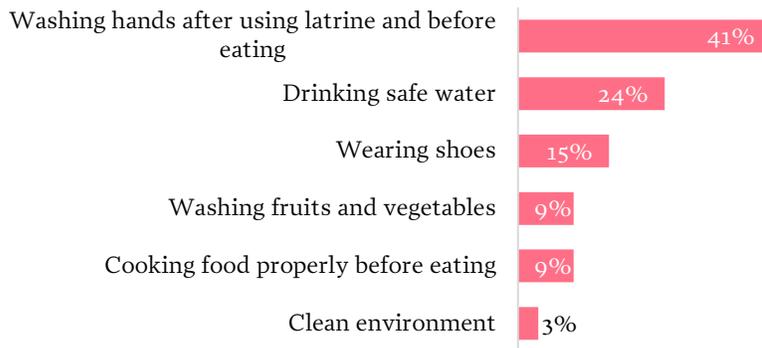


Figure 17b. Non-enrolled children's knowledge on how to prevent worm infection (n=25)



4.4 School hygiene facilities

Inadequate sanitation in schools makes it difficult to prevent worms and other diseases. Observation of school hygiene facilities showed that 63% of schools had a toilet structure and of these, 54% were pour-flush toilets, 25% pit latrines, and 21% improved pit latrines. Sixty-seven percent (67%) of schools did not have hand washing facilities. Of schools with hand washing facilities, only 55% had soap or ash available.

4.5 Data audit

During the MDA, deworming teams use a class treatment register to record the details of children treated and drugs received. Data is summarized by head teachers and entered in the school summary form. One copy of the school summary form is returned to the school's zonal education office, a second copy is sent to the LGA office, and a final copy to the state office. The state enters data from the school summary forms into an electronic database and prepares a summary report for the national NTD program. Evidence Action uses data collected by the independent monitors to check the accuracy of the report through a data audit in a sample of schools. Evidence Action compared the data in the class treatment registers with data in the school summary forms, and then compared the school summary forms with treatment data provided by the state team from the same schools.

4.5.1 Class Treatment Register vs. School Summary Form

The data audit assessed five components from the class treatment register and school summary forms: the number of children registered, number of children treated with mebendazole, number of children treated with praziquantel, number of praziquantel tablets used, and number of mebendazole tablets used.

Error rates as used here henceforth refer to the percentage of schools where the absolute percentage difference for a data element as recorded on two forms (the class treatment register and the school summary) was greater than 10%. The median indicates the percentage difference for half (50%) of the schools if the absolute percentage differences between treatment register and the school summary form was arranged in ascending order.

The overall findings indicate that only 11% of the schools summarized all elements in their school summary forms within a 10% range of their corresponding class register values. The error rates across various elements were generally high (ranged from 26% to 47%) with children registered having the highest error rates (ranged from 40% to 44%). (**Table 5**). This means that the number of children in the school summary form was summarized to greater than a 10% range of the class level register in at least 4 in 10 of the schools.

The median was generally low (range 0% to 7%) across the various data elements. This implies that for each various element, over half of the schools were able to match the elements in the school summary information to within a 7% range of that of the class level information.

Overall, the fact that only 11% of the schools were found to match the school summary records to corresponding class level entries suggest that head teachers would benefit from additional training on reporting and recording methods, as well as closer supervision, to reduce discrepancies between class treatment registers and school summary forms (**Table 5**).

Table 5. Data variances in class registers and school summary forms

Data elements	Error rate	Median ¹³
Male children registered (n=47)	40%	4%
Female children registered (n=44)	44%	2%
Total number of girls treated with mebendazole (n= 55)	28%	3%
Total number of boys treated with mebendazole (n= 56)	26%	1%
Total number of girls treated with praziquantel (n=49)	29%	0%
Total number of boys treated with praziquantel (n=48)	30%	0%
Total mebendazole used (n=50)	34%	2%
Total praziquantel used (n=34)	47%	7%

4.5.2 School Summary Form vs. State Electronic Database

Evidence Action compared data in school summary forms (collected by monitors) with data in the state’s electronic database.

The findings indicate that across all elements, only 21% of schools had their school summary form data recorded to within a 10% range of the corresponding state database entry.

Error rates (percentage of schools where absolute percentage difference between element in the school summary form was greater from than that in the state database by more than a 10% margin) was highest for medicines used; in 32% of schools (for both the number of mebendazole and praziquantel tablets recorded) (**Table 6**).

The zero median across all the data elements implies that for each element in the school summary form, the state data managers were able to make an exact record in the state database for at least half of the schools.

It should however also be noted that the present design of the forms leaves room for error in comparison of records given than school names and not IDs are used to compare records. This is because there are no state provided IDs to schools to ease matching of records at state level.

¹³ The median represents the middle value in the range of the percentage difference between the treatment registers and the school summary forms. The percentage difference between the treatment register and summary form in all schools are arranged from lowest to highest and the mid-value is selected as the median.

Table 6. Difference between data in school summary forms and state database

Data elements	Error rate (+/- 10)	Median
Male children registered (n=63)	19%	0%
Female children registered (n=62)	21%	0%
Total number of girls treated with mebendazole (n= 59)	23%	0%
Total number of boys treated with mebendazole (n= 57)	26%	0%
Total number of girls treated with praziquantel (n=51)	27%	0%
Total number of boys treated with praziquantel (n=51)	27%	0%
Total mebendazole used (n=51)	32%	0%
Total praziquantel used (n=45)	32%	0%

4.5.3 Data audit conclusions

The findings indicate that 21% of schools had all their summary form data elements within a 10% range of corresponding state database entries while this is only 11% for the class register to school summary form transfer. This coupled with the higher error rates for the school level data transfer (up to 47%) as compared to the state level (up to 32%) as well as the zero median at state level for all data elements indicates better transfer at state than school level. Whereas the results point to better data management practices at state than school level, there is a need for more trainings across both levels, to arrest the high error rates noted. Further, the state should consider developing school IDs, not only for the IM exercise, but also to enable unique referencing of schools for other purposes within the state. Given the opportunity, Evidence Action can also support the state team to consider and implement the suitable approaches to improve the accuracy and quality of data in the next round of treatment.

5.0 Lessons Learned

After evaluating the results of the February 2018 deworming in Oyo state, there are several lessons to learn from the process monitoring review, and it is important to keep these items in mind as planning begins for the next deworming round.

5.1 What worked well

1. Key training materials, such as teacher handouts, school summary forms and treatment registers were distributed in majority of teacher trainings. The teacher handout also served as the main source for sensitizing teachers, and was an implementation guide for teachers in many of schools monitored.
2. Major topics on drugs and materials, health education, and forms and administration procedures were completely covered in majority of teacher trainings. This helped deworming teams to understand key MDA procedures, such as the age group for deworming, drugs, and dosage. It shows that trainers provided detailed key training content, leading to effective knowledge transfer.

3. Key MDA procedures were observed to be correctly followed in a large proportion of schools monitored. This suggests that trainings properly prepared teachers for deworming, and that participants took steps to sensitize fellow teachers before deworming.
4. Most parents of enrolled children were informed about deworming by another individual: namely, their child or a teacher. Teachers should continue to encourage children to share deworming information with parents and friends. Meanwhile, radio was key in sensitizing parents of non-enrolled children: 49% of those interviewed heard about deworming via radio.

5.2 What needs to improve

1. SAE protocols were handed out to teachers in only 68% of training sessions monitored. The training flip chart does not refer to the protocol, making it easy for trainers to run through training without using the protocol. If the protocol is not used during training, it is possible that teachers do not receive or use the protocol document. The flip chart should to be updated to reference the SAE protocol and ultimately, guide treatment of SAEs.
2. Teachers' role of sensitizing other teachers to provide support on Deworming Day was mentioned in only one monitored training center. This is important to ensure that there is enough support for teachers to conduct deworming systematically and successfully. This role needs to be reinforced in future trainings, and included in training flip charts or handouts for emphasis.
3. Teachers mainly spoke to parents about deworming, and less frequently to community leaders, church members, and friends or neighbors. Teachers play a key role in mobilizing the community for Deworming Day. Therefore, in teacher trainings, the NTD program team needs to develop and communicate strategies through which teachers can reach out to community and religious leaders to increase the teachers' role in mobilizing non-enrolled children for treatment.
4. Handwashing was observed in only 13% - 43% of schools, and 67% did not have handwashing facilities in place. The NTD program should seek collaboration with WASH programs in the state to improve handwashing facilities and culture in schools.
5. Non-enrolled children were only present for deworming in 24% of schools observed. Eighteen percent (18%) of parents of non-enrolled children interviewed prior to deworming said their child would not participate in the exercise; 27% of these did not trust the drug. There is a need to provide information through trusted community ambassadors to assure parents of the safety of deworming.
6. The data audit findings revealed much higher error rates at school as compared to state level. While this points to better data management practices at state level as compared to school level, the high error rates at both levels indicate a need for trainings for both state data managers and head teachers.

5.3 Conclusion

The monitoring exercise set out to assess the effectiveness and quality of the activities during the deworming exercise as well as propose areas for remedy. The overall findings point to a rather successful deworming exercise across all areas of implementation with the sections on material distribution, topic delivery, all noted for the good performance. The findings also reveal areas that could benefit from more support from the state including the inclusion of more non-enrolled children in the deworming exercise, implementation of better data management practices at both state and school level. Together with the state organs, Evidence Action is committed to providing both technical and logistical support in the drive for a worm free school-age population.