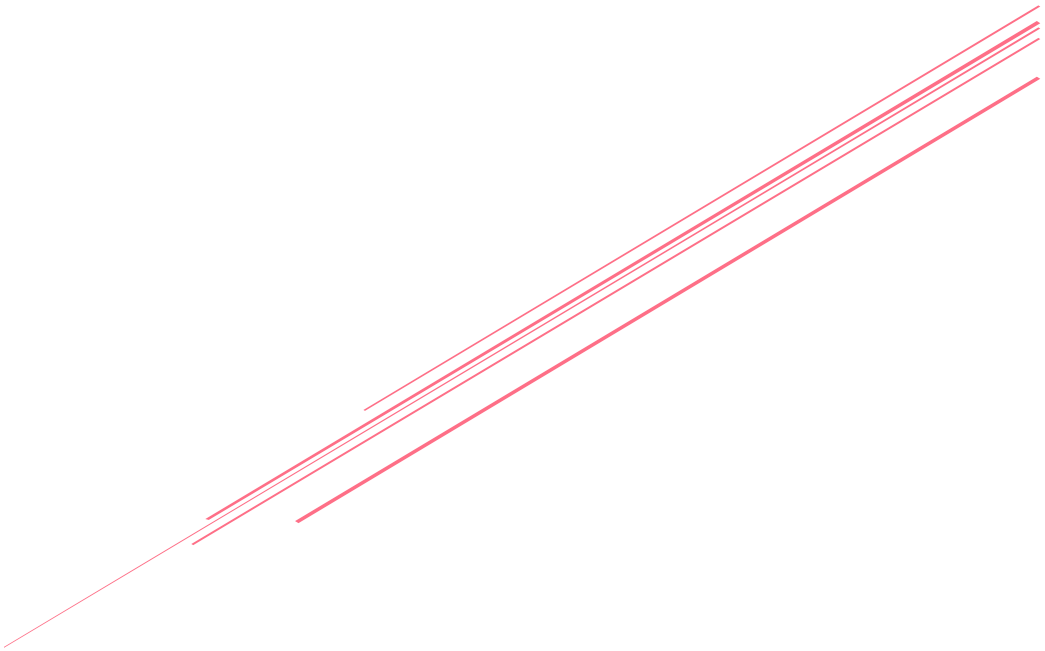
Evidence Action

Deworm the World Initiative

School-based Deworming in Cross River State, Nigeria

Process Monitoring Report and Data Audit

May 2018



Contents

Glossary

FLHF. Frontline health facility

FMOH. Federal Ministry of Health

LGA. Local government area

MDA. Mass drug administration

NTD. Neglected tropical disease

PC. Preventive chemotherapy

SAE. Severe adverse event

STH. Soil-transmitted helminths

WHO. World Health Organization

1.0 Executive summary

In May 2018, Cross River state carried out school-based deworming of enrolled and non-enrolled children ages 5-14 years in 10 of 18 LGAs according to their endemicity for soil-transmitted helminths (STH) and schistosomiasis. Five LGAs treated for STH only; four LGAs treated for schistosomiasis only; and one LGA treated for both STH and schistosomiasis. In the state, 1,610 public and private primary and junior secondary schools were targeted for deworming.

To assess effectiveness of implementation, and to 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 in the state. Evidence Action also conducted a data audit activity to assess the accuracy of treatment data reported by schools. Through a competitive selection process, Evidence Action recruited an independent consultancy firm, Infotrak Research and Consulting, to collect data from a sample of 41 teacher trainings, 66 schools, and 66 local communities participating in school-based deworming.

Prior to Deworming Day, the program trained teachers to administer safe and effective deworming drugs: mebendazole for STH and/ or praziquantel for schistosomiasis. The monitors attended 39[1] of 41 targeted teacher training sessions and found that required materials were handed out in the majority (79%-97%) of trainings, except for the severe adverse event (SAE) protocol, which was handed out to teachers in 56% of trainings. Though the number of teacher training sessions where SAE management protocols were distributed marked an increase from 24% in 2017, further improvement is required to ensure the quality of the program. Trainers thoroughly covered content related to drugs and materials, health education, reporting forms, and drug administration, though the level of detail varied. In 96% of observed trainings, teachers were instructed to ensure children eat before taking praziquantel and 95% of trainings covered how to prepare the treatment register.

On Deworming Day, teachers adhered to some MDA procedures more than others; for instance, in 95% of schools, monitors observed the treatment register being used to record treatment while only 33% of those noted student absences in the treatment registers for deworming during mop-up. In all schools treating for both STH and schistosomiasis, the teacher asked if the child was sick or under medication before administering drugs; the same was observed in 76% of schools treating for STH only, and in 77% of those treating for schistosomiasis only.

Awareness on Deworming Day was higher among parents of enrolled children (73%) than parents of non-enrolled children (59%) interviewed in the community. The key source of information for parents of enrolled children was their child, while most parents of non-

[1] Two training sessions were not monitored due to changes in training date at the LGA level that was not communicated to the State team. The training had already taken place when the monitors arrived in the LGA.

enrolled children received information via town announcers. On Deworming Day, monitors found non-enrolled children present for treatment in 14% of schools.

A data audit was carried out at two levels, comparing elements in the class treatment registers to corresponding entries in school summary forms and the state electronic database. Higher error rates were noted at the state level (up to 83%) as compared to the school level (as high as 44%). This points to a need for more training at the school and LGA level in order to increase the quality of data returned to the state.

2.0 Introduction

Worm infections interfere with 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 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 May 2018, Cross River state conducted school-based deworming in 10 Local Government Areas (LGAs) according to their endemicity for STH and/or schistosomiasis. Five LGAs treated for STH only; four LGAs treated for schistosomiasis only; and one LGA treated for both STH and schistosomiasis. Enrolled and non-enrolled children ages 5-14 years 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.

Evidence Action designed data collection tools and a sampling method to observe, review, and measure the quality and success of teacher trainings, community mobilization and sensitization, Deworming Day activities as well as conduct a data audit to assess data quality. Infotrak was chosen through a competitive selection process to collect the data, which Evidence Action then cleaned, entered, and analyzed. The findings are presented in the following report.

3.0 Methodology

Infotrak recruited a total of 78 monitors and 10 supervisors, using pre-defined criteria, to monitor a random sample of 41 teacher training sessions and 66 schools where deworming took place. Monitors were rigorously trained by Evidence Action in two batches, for three days each from 19th to 25th April, 2018. The curriculum covered an overview of the 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 attained during training. Post-training, monitors' knowledge increased by an average of 50% with 96% scoring above 80% in the post-test.

Prior to Deworming Day, teachers from all 1,610 targeted schools received a one-day training on mass drug administration (MDA). Evidence Action used stratified sampling to randomly select 41 of the 84 teacher training sessions and 66 of the 1,610 targeted schools for observation. Through observation guides and questionnaires, monitors assessed the quality of trainings and implementation of deworming. The sample size was determined to ensure a 90% confidence level and a 10% margin of error.[2]

One day prior to Deworming Day, monitors visited a sample of 67 schools to conduct head teacher interviews to gauge the schools' preparedness to conduct deworming; in total, 65 (97%) head teachers affirmed that deworming would take place the next day as planned. The two teachers that indicated their school would not deworm reported that the head teachers were not aware of MDA. Parents residing in areas around the selected schools were also interviewed one day prior to deworming to gauge their awareness of the program. Monitors interviewed 366 parents: 200 parents of enrolled children and 166 parents of non-enrolled children.

On Deworming Day, monitors visited a sample of 66 schools, different from those visited prior to Deworming Day to avoid bias. 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 verify that the required deworming procedures were followed. Following the treatment, monitors randomly selected and interviewed one parent, one teacher, two enrolled children, and one non-enrolled child. In total the monitoring teams interviewed 30 parents (present during deworming), 66 teachers, and 139 students (11 non-enrolled and 128 enrolled children consented to an interview).

Five days after deworming, monitors visited a different sample of schools than those visited on Deworming Day to carry out a data audit by comparing class treatment registers with the school summary forms. This was also compared to data received at the state level, to assess accuracy.

[2] 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.

4.0 Results

4.1 Review of teacher training

4.1.1. Attendance during trainings

The monitors recorded attendance at 39 teacher trainings, finding an average of 22 participants at the start of training and 26 participants at the end of training. This indicates that several participants arrived late. The expected number of participants in training sessions varied depending on the number of teachers per training cluster. On average, a training cluster should have had 35 teachers. The fewest participants among monitored training centers was 16 teachers, while the highest number of participants observed was 40 teachers.

Table 1. Sample sizes for the process monitoring

Monitoring activity	Total population	Target sample size	Actual sample size
Total number of teacher training sessions	84	41	39[3]
Total number of schools treated	1,610	66	66
Total number of schools targeted for treatment with mebendazole only	692	30	30
Total number of schools targeted for treatment with praziquantel only	976	30	30
Total number of schools targeted for treatment with both mebendazole and praziquantel	149	6	6
Pre-Deworming Day interviews			
Parents interviewed	-	396	366
Head teachers interviewed	1,610	67[4]	65
Deworming Day interviews			
Teachers interviewed	3,220	66	66
Parents interviewed	-	66	30
Enrolled children interviewed	-	132	128
Non-enrolled children interviewed	-	66	11
Data audit	-	69	69

4.1.2 Access to training materials

In 97% of monitored trainings, teacher handouts were distributed. School summary forms were distributed in 82%, treatment registers in 79%, and school posters in 85% of trainings. On Deworming Day, 71% of interviewed teachers used the handout as a guide when organizing and conducting treatment. This highlights its value for implementation. The SAE management protocol was least distributed at training sessions, observed in only 56% of

[3] Two teacher training centers were missed as the LGA NTD coordinator did not communicate a change in date with the state team. When monitors arrived, the trainings had already taken place.
[4] Two schools reported that they were not planning to deworm as the head teachers were not aware of the planned MDA.

trainings **(figure 1)**. However, the protocol is a required material for both training and Deworming Day.

Figure 1. Materials given to teachers at teacher training sessions (*n=39*)

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 the majority of topics were completely[5] covered, although there were some subject areas that received less focus. Trainings most thoroughly covered topics related to drugs and materials, health education, and forms. Over 80% of the trainers completely covered all topics related to drugs and materials, with the exception of drug storage which was completely covered by 67% of trainers. More than 65% of observed trainings completely covered content related to health education. STH morbidity was covered by more trainers than was schistosomiasis morbidity.[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**).

Coverage of specific procedures in drug administration varied considerably (figure 3). Drug distribution sites were completely covered in only 56% of trainings while ensuring children eat before giving praziquantel was covered in 96% of trainings. Only 64% of trainings directed teachers to check if the child swallowed the drugs, while 92% completely explained the importance of giving drugs with water and making sure that ill children do not take

[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.

drugs. In trainings where topics were not completely covered, most trainings partially covered the topic.

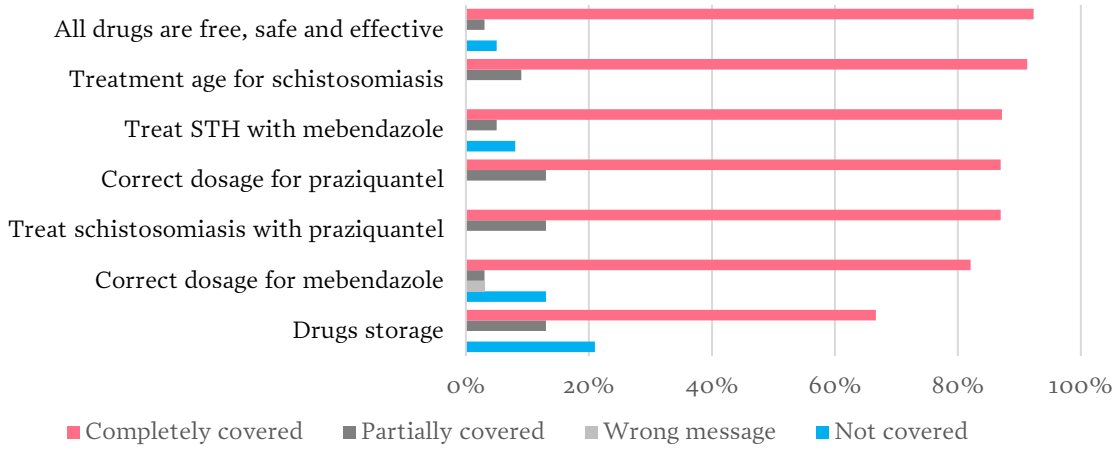
4.1.4 Training methods used

The majority (85%) of trainers used lecture-based approaches for delivering the training topics. In addition, 64% of trainers held discussions, 18% led demonstrations, 8% administered group work, and 3% used role play. Trainers should continue to use multiple methods for reinforcement, and should particularly increase the use of role play to ensure participants' ability to apply knowledge in practical situations.

Monitors observed administration of a pre-test in 72% of trainings, and a post-test in all trainings. The state reported that 88% of trainers administered a pre-test, and 94% gave a post-test to assess transfer of knowledge. An analysis of participants completing both a pre and post-test showed an average pre-test score of 65%, and post-test average score of 85%. Sixty percent of teachers who took the pre-test indicated that they had attended a school-based deworming training previously.

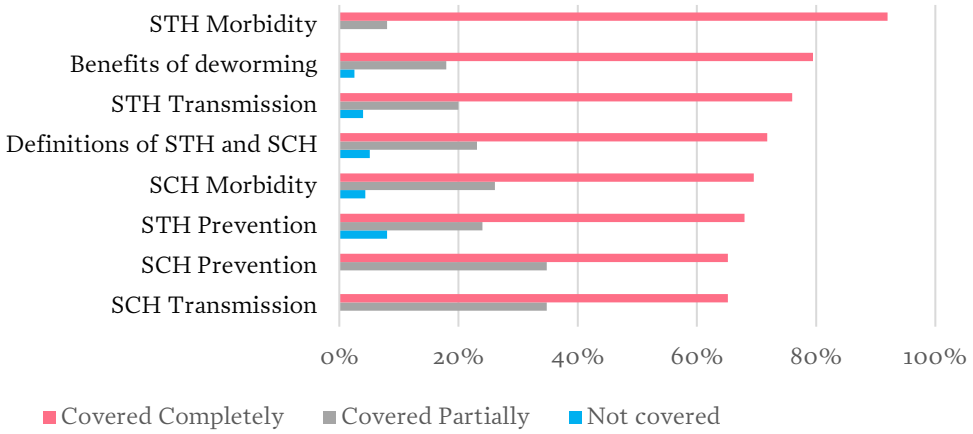
Figure 2. Completely covered topics across training sessions on drugs and materials, health education and forms *(n=39)*

Drugs and materials[7]

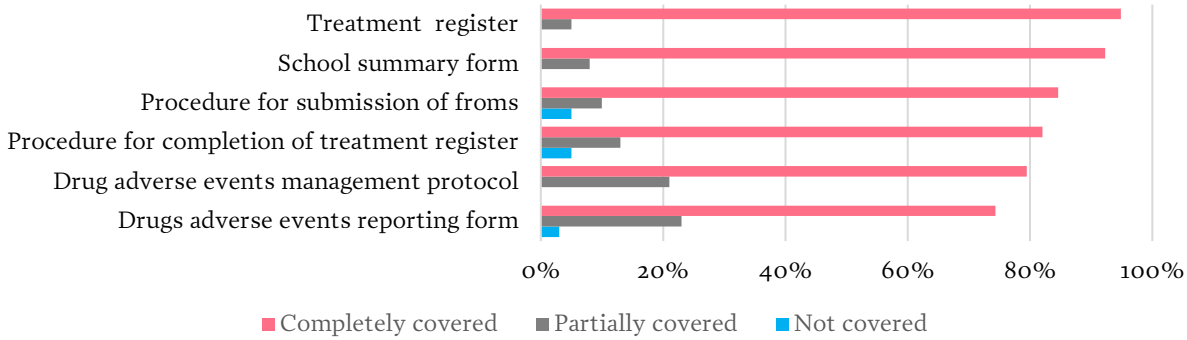


[7] One trainer provided the wrong message on mebendazole dosage, noting that "children between 5 - 10 years are to take 1 tablet; children between 11 - 14 years are to take 2 tablets."

Health education



Forms[8]



4.1.5 Teacher roles and responsibilities

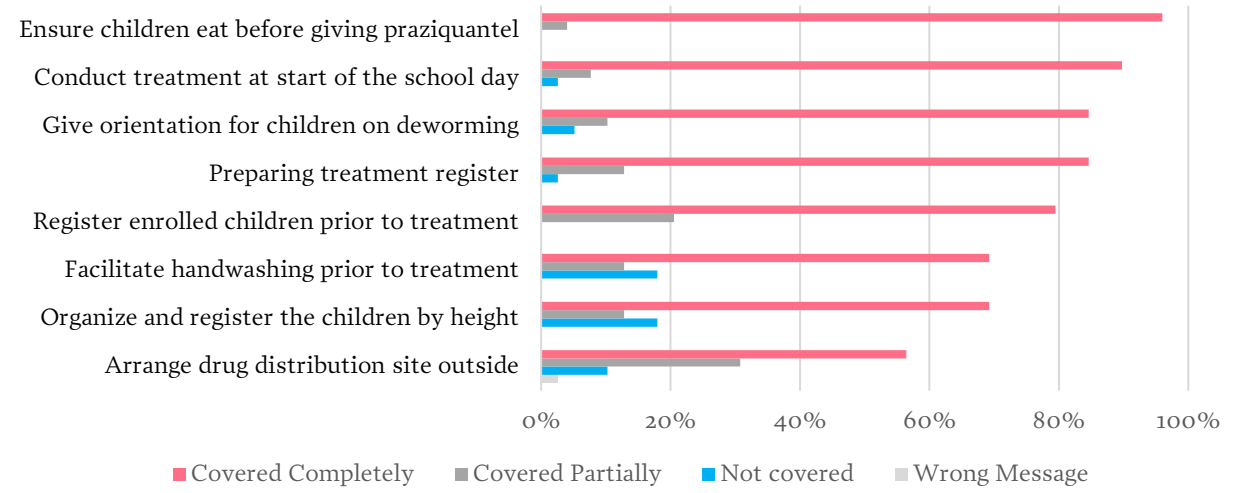
Trainers covered the roles of different actors in the deworming process, including NTD coordinators, education secretaries, frontline health facility (FLHF) staff and teachers. Teachers were trained on their multiple roles in the process, with emphasis on organizing drug administration and completing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

During trainings, teachers were also taught their role in community sensitization, with emphasis on encouraging children to share Deworming Day information with their parents, and displaying posters in the school (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.

[8] Although the SAE management protocol was available in only 56% of trainings, 79% of trainers still covered the SAE topic completely, using content in the training flip charts.

Figure 3. Completely covered topics across training sessions on MDA *(n=39)*

Preparation for drug administration



During and after drug administration

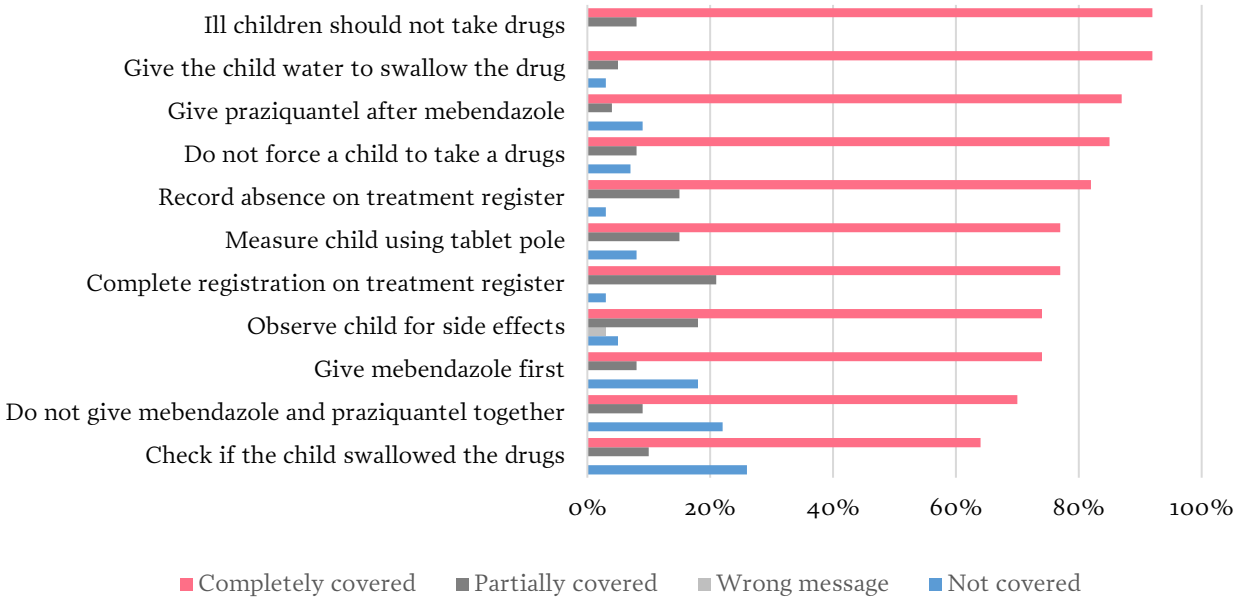


Figure 4. Teachers' roles in deworming covered during training sessions (*n=39*)

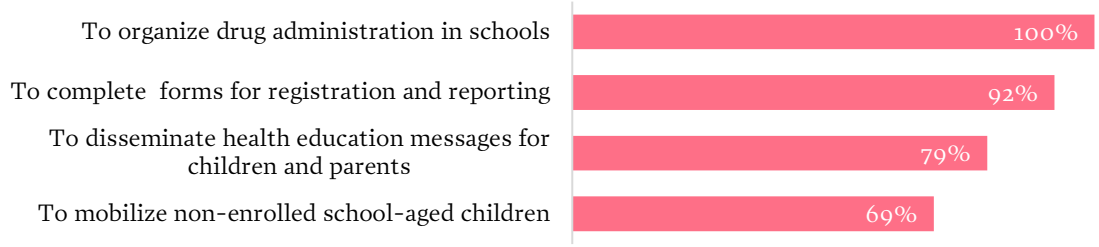
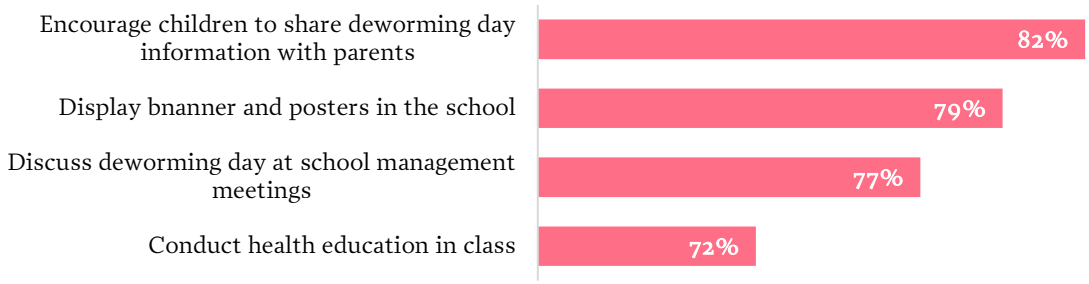


Figure 5. Teachers' roles in sensitization covered during training sessions (*n=39*)



The FLHF staff based at health facilities primarily support the deworming process by handling any emerging SAEs while making referrals as necessary. The most common roles defined for FLHF staff were to participate in community awareness creation, conduct drug administration in schools with the teachers, and/or manage side effects. The main roles defined for FLHF staff in sensitization were discussing Deworming Day and objectives with community leaders and contiguous communities, and supporting teachers. 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 T**able 2**).

4.2 Deworming day assessment

4.2.1 Preparedness for Deworming Day

Prior to Deworming Day, monitors visited 67 randomly sampled schools, of which 65 planned to carry out deworming. Monitors interviewed the head teacher to assess school preparedness. A different sample of 66 schools were visited 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 MDA.

Seventy percent (70%) of head teachers interviewed on Deworming Day had attended a training session, while 27% reported that another teacher from their school attended the training. Of the 3% of head teachers reporting that no teacher from their school attended a training session, 2% said that a trained teacher from another school is coming to deworm the children and 1% did not have a plan in place for deworming.

Table 2. Trainer explanation of the role of different actors in the deworming program (*n=39*)

Role of FLHF staff in the deworming program	Percentage
To manage side effects	67%
To participate in community awareness creation and drug administration in schools with the teachers	67%
To communicate the rationale of deworming to community leaders	64%

To manage, refer, and report children with adverse effects	51%
Role not covered	8%
Responsibility of FLHF staff in community sensitization and mobilization	Percentage
Discuss Deworming Days and objectives of deworming with community leaders	67%
Support teachers	62%
Discuss Deworming Days and objectives of deworming with contiguous communities	62%
Mobilize the community leaders for house-to-house sensitization	62%
Mount deworming day posters	46%
Role not covered	3%
Role of the NTDs coordinator and educational secretary in the deworming program	Percentage
To store drugs in a proper facility until the next treatment round	54%
To compile a report about treatment coverage in the LGA as a whole	49%
Role not covered	13%

Sixty-eight percent (68%) of schools reported to have drugs available in school prior to deworming. After deworming, all head teachers reported having sufficient drugs for MDA. In 54% of schools observed, the deworming poster was displayed. Posters were provided during training and teachers were requested to post them visibly in schools. Monitors observed that some teachers either posted it in their offices (therefore not visible), posted only on Deworming Day, or did not post at all.

4.2.2 Deworming team knowledge

On Deworming Day, monitors asked the deworming team how they received training. Forty-seven percent (47%) of teachers said they had been trained by a teacher who attended the training, including 30% by a health teacher, 12% by a head teacher, 9% by a frontline health officer, and 2% by an education secretary.

Ninety-eight percent (98%) of teachers knew that the age group for treatment was 5-14 years. In the 36[9] monitored STH treatment schools, 94% of teachers interviewed knew that mebendazole was used to treat STH and 97% knew the correct dosage.

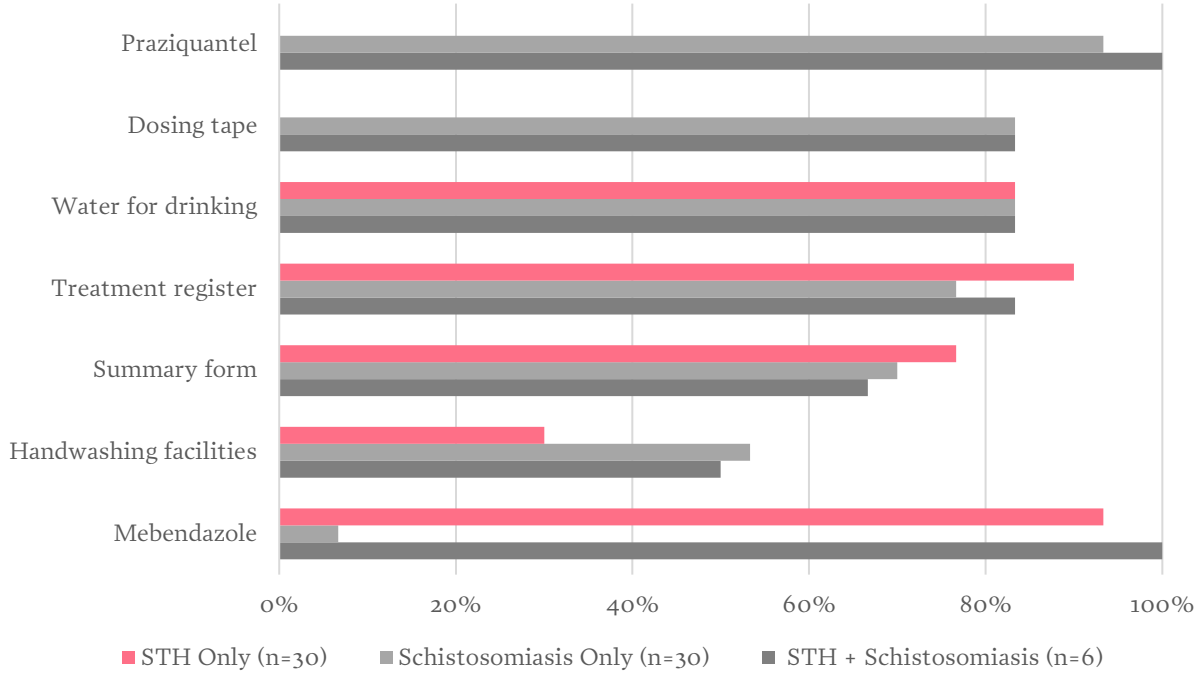
Across all the 36[10] schools treating for schistosomiasis, 94% knew the correct drug for schistosomiasis treatment and 94% of teachers knew that dosage was administered according to the tablet pole. Ninety-four percent (94%) of teachers knew that infection spreads by contact with contaminated soil and/or water.

4.2.3 Materials observed for deworming

[9] 30 schools treating for STH only and 6 schools treating for both STH and schistosomiasis
[10] 30 schools treating for schistosomiasis only and 6 schools treating for both STH and schistosomiasis

On Deworming Day, monitors found the majority of required materials, including treatment registers, drugs and summary sheets, were present at schools, regardless of their treatment strategy (i.e., STH, schistosomiasis, or both) (**Gigure 6**).

Figure 6. Materials observed on Deworming Day by the monitoring team at schools



Monitors asked teachers if they referenced their training handout when organizing and conducting deworming; 71% used the handout, while 6% said they did not receive it.

4.2.4 Drug administration procedures

Monitors observed whether deworming teams adhered to key procedures. **Table 3** shows that teachers followed correct drug administration procedures, in accordance with the appropriate treatment strategy. For example, in all schools treating for both STH and schistosomiasis, the teacher asked if the child was sick or under medication before administering medicine. This occurred in 76% of schools treating for STH only and 77% for schistosomiasis only. Monitors observed a low percentage (35%-37%) of teachers ensuring that children washed their hands prior to treatment in schools treating for STH or schistosomiasis only (**table 3**). This was low compared to schools treating for both, with 83% of teachers ensuring children washed their hands.

Table 3. MDA procedures observed by monitors during drug administration

MDA procedures for STH only (*n=30*)	Percentage
Teachers who knew the correct dosage for mebendazole (1 tablet)	95%
Child asked to chew the mebendazole tablet	80%
Teacher asked if child was sick or under medication before administering medicine	76%

Teachers ensured children washed their hands prior to treatment	35%
MDA procedures for STH + schistosomiasis (*n=6*)	Percentage
Teacher asked if child was sick or under medication before administering medicine	100%
Teachers broke up praziquantel tablets into smaller pieces for younger children	100%
Teachers used a dosing tape or make-shift dose tape	90%
Teachers ensured children washed their hands prior to treatment	83%
Child swallow Praziquantel with drinking water	68%
Teachers administered mebendazole first then praziquantel	64%
MDA procedure for schistosomiasis only (*n=30*)	Percentage
Teachers used a dosing tape or make-shift dose tape	100%
Teacher asked if child was sick or under medication before administering medicine	77%
Teachers broke up praziquantel tablets into smaller pieces for younger children	73%
Children swallowed praziquantel with drinking water	50%
Teachers ensured children washed their hands prior to treatment	37%

4.2.5 Treatment procedure for deworming

Adherence to correct treatment procedures varied considerably; teachers followed some more closely than others. At 95% of schools observed, teachers used treatment registers to record treatment, but only 33% noted absences on Deworming Day for treatment during mop-up (**table 4**). Appropriate usage of treatment registers made it easier for teachers to track absent students and effectively follow up for mop-up. Spoiled tablets (e.g., fell on floor, water spilled on tablet, child spits it out) were observed in 36% of monitored schools. Of these, 79% disposed of the tablets correctly.

Table 4. MDA procedures observed by monitors during deworming (*n=66*)

MDA procedure	Percentage
Teachers properly recorded non-enrolled children in the register (n=9)[11]	100%
Teachers recorded names in the register as tablets were administered	95%
Treatment register was used to record treatment	95%
Deworming team comprised of two teachers	94%
The teacher had transferred the names from the class register to treatment register prior to the deworming exercise	85%
All sections of treatment register were completely filled out	83%
Health education messages given to children prior to treatment	70%
Spoilt tablets were properly disposed of by teachers (n=24)[12]	79%
Children were organized and treated by class	67%
Schools noted student absence for possible future treatment	33%

[11] This procedure was only observed in schools treating non-enrolled children.
[12] Percentage derived from monitors that observed any spoilt tablets in schools.

4.2.6 Managing side effects

Prior to Deworming Day, monitors asked headmasters about their plans to handle side effects and SAEs. Seventy-seven percent (77%) of headmasters interviewed said that FLHF staff should manage children with side effects following treatment. In schools treating for schistosomiasis, all teachers had requested children to eat breakfast before treatment to avoid side effects.

On Deworming Day, monitors observed side effects in 14 (21%) of the 66 schools visited. While there were instances of nausea, fainting and vomiting noted, majority of the observed effects had to do with abdominal discomfort and headache. However, only 29% of observed schools recorded SAEs. In 64% of side effect cases, the teacher showed ability to handle the effects and treat the child properly. However due to the severity of adverse effects in two of the 14 schools, children were referred to a local health facility for further attention.

4.2.7 Inclusion of non-enrolled children

The deworming program aims to treat both enrolled and non-enrolled children. Prior to Deworming Day, 41% of headteachers reported significant numbers[13] of non-enrolled children, ages 5-14, in the local area. On Deworming Day, monitors observed that 14% of schools had non-enrolled children present for treatment. Somewhat similarly, in 2017, 16% of schools had non-enrolled children present for treatment in Cross River State. Efforts should be made to further mobilize these children for treatment.

4.2.8 Head teacher post-deworming interview

Upon completing deworming, all interviewed head teachers found Deworming Day to be a success and said they had sufficient drugs to carry out deworming. Ninety-five percent (95%) of head teachers had extra tablets left over. Of the teachers with leftover drugs, 84% planned to keep these tablets for mop-up day while 16% planned to return to the FLHF which are all in line with the program strategy to keep drugs for mop-up and return drugs 5 days after mop-up.

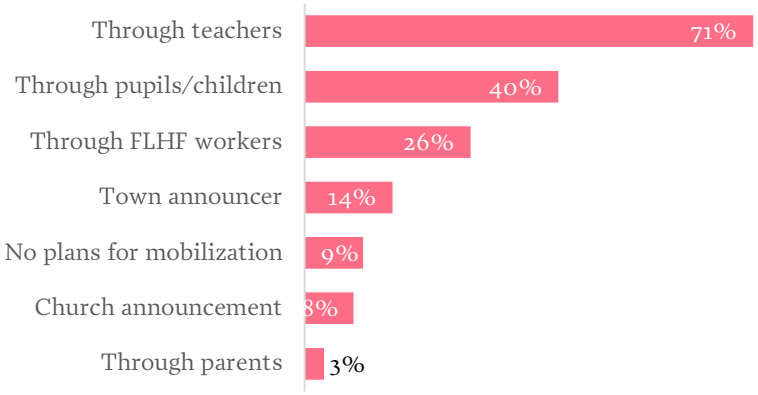
4.3 Community sensitization

4.3.1 Sensitization of children before deworming

When monitors visited 67 schools to assess their preparedness prior to deworming, two schools were not interviewed as the head teachers did not plan to deworm. Of the 65 schools where deworming was scheduled, 82% sensitized children in the community beforehand. **Figure 7** shows that the main sensitization method was through teachers (52%), followed by other children (26%).

[13] Significant number meaning more than the number of enrolled children actively coming to school in the area.

Figure 7. Method used by teachers to mobilize children for deworming (*n=65*)



4.3.2 Community sensitization efforts to mobilize non-enrolled children

Monitors asked head teachers what they would do if they experienced a low turn-out of non-enrolled students for treatment. Thirty-six percent (36%) mentioned that they would ask enrolled children to invite them for deworming; 23% planned to extend the deworming period and go to the community to mobilize them; 12% indicated they would consult with the LGA coordinator to know what to do; 29% did not know what action to take. This suggests the need for the program team to create and communicate a clear plan of action for schools to engage non-enrolled students.

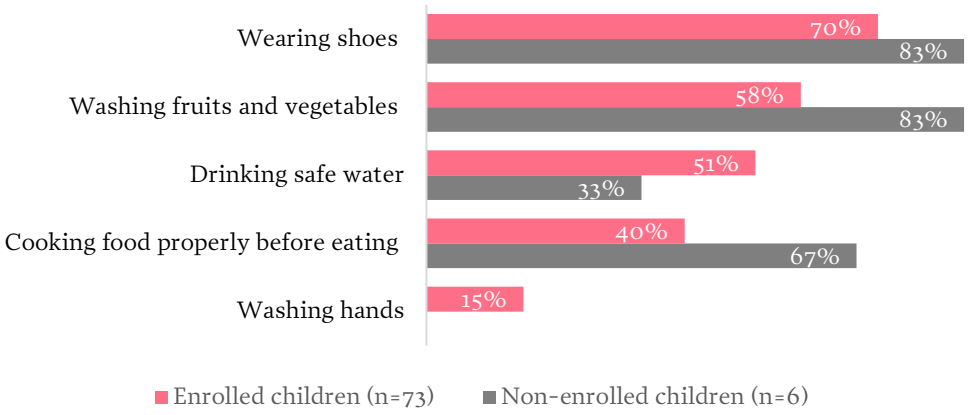
4.3.3 Sensitization as reported by children

Monitors aimed to interview two enrolled children per school, and spoke with 128 enrolled children (who consented to an interview) on Deworming Day against the planned 132. They also targeted one non-enrolled child per school but because few non-enrolled children were present on Deworming Day, monitors only interviewed 11 non-enrolled children. Seventy-six percent (76%) of enrolled children knew the tablets they were given were for worms, compared to 64% of non-enrolled children. Eighty-six percent (86%) of enrolled students told their parents about deworming, compared to 67% of non-enrolled children.

4.3.3.1 Children's knowledge on deworming treatment

Fifty-seven percent (57%) of enrolled children knew how to prevent worms, compared to 55% of non-enrolled children. Preventive measures cited by the children are shown in **Figure 8**.

Figure 8. Knowledge on worm prevention among enrolled and non-enrolled children



4.3.4 Sensitization as reported by parents

Prior to deworming, monitors interviewed 366 parents, including 200 parents of enrolled children and 166 parents of non-enrolled children. Parents of enrolled children were more aware of Deworming Day (73%) compared to parents of non-enrolled children (59%). Ninety-two percent (92%) of parents of enrolled children planned to send their children for treatment, compared to 79% of parents of non-enrolled children. All parents mainly received information through their child, the town announcer, or through an announcement made in church or mosque (**figure 9**).

Of enrolled parents, only 1% mentioned that their child would not participate in Deworming Day, compared to 13% of non-enrolled parents. The main reason that parents of non-enrolled children would not send their child for treatment was the child not being at home (figure 10).

4.3.4.1 Parent knowledge on deworming treatment

Parents of enrolled children knew more about the correct target population and age group for treatment compared to parents of non-enrolled children (figure 11). Knowledge regarding worms to be treated was similar for parents of both groups.

Figure 9. Sources of deworming information mentioned by parents

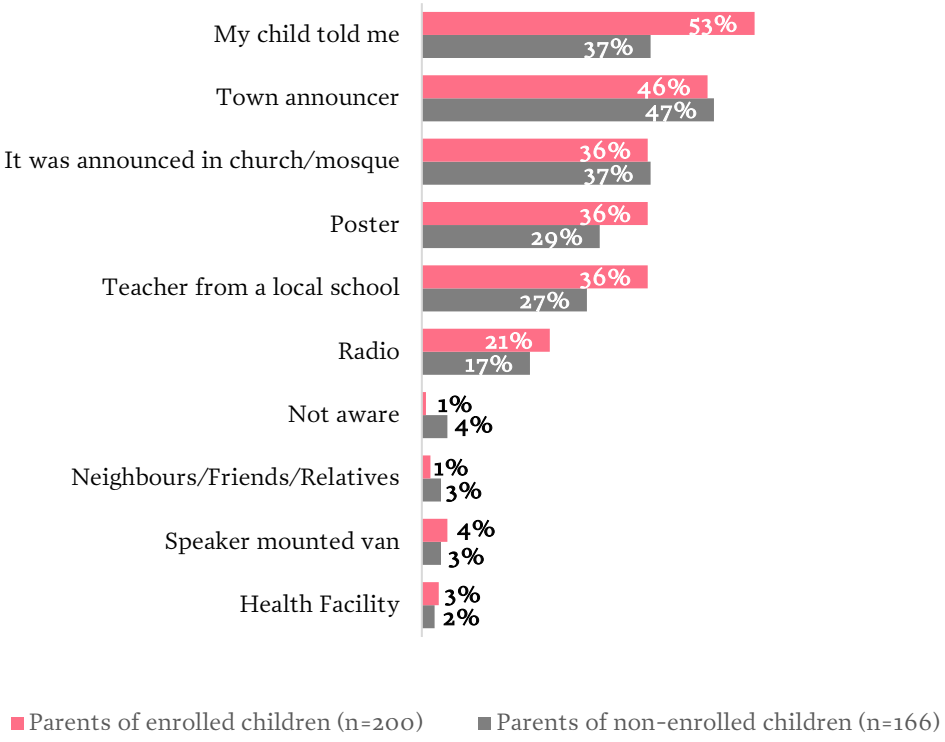


Figure 10. Reasons not to send their child for deworming treatment mentioned by parents of non-enrolled children (*n=22*)

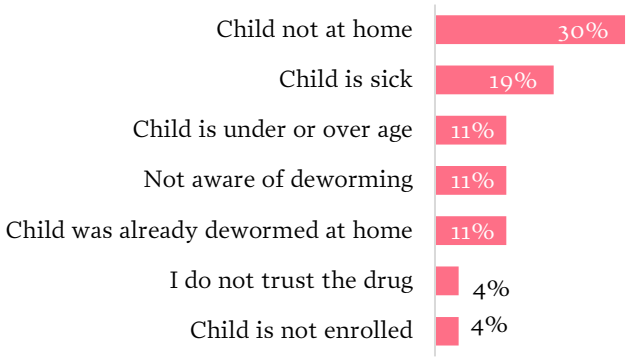
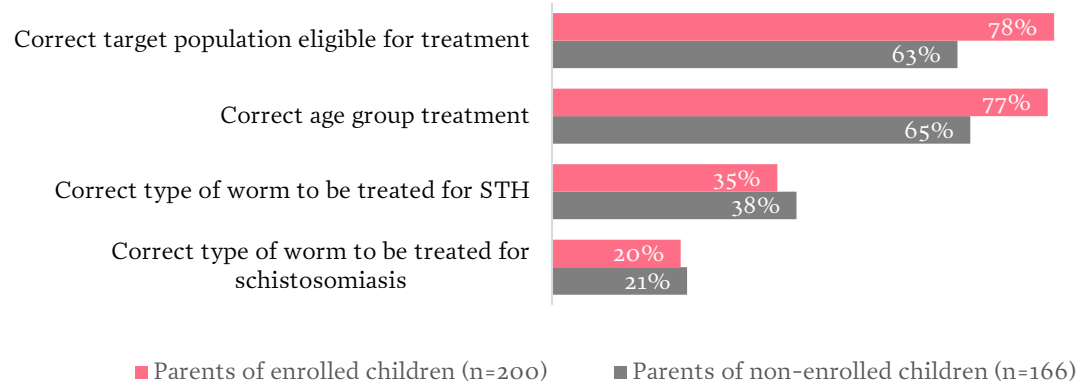


Figure 11. Parents' knowledge of the deworming treatment



4.4 School hygiene facilities

Inadequate sanitation in schools makes it more difficult to prevent worms and other diseases. Sixty-seven percent (67%) of schools had a toilet structure; of these, 43% had a pour-flush toilet, 34% had improved pit latrines, and 23% had ordinary pit latrines. Fifty-five percent (55%) of schools did not have handwashing facilities, reducing the overall proportion of schools where handwashing took place before deworming. Of schools with hand washing facilities, only 48% had soap or ash available.

4.5 Data audit results

During MDA, the deworming team uses a class treatment register to record details of children treated and the drugs received. This data is summarized by the head teacher and entered in the school summary form. The teacher sends to the ward three copies of the school summary form, the ward focal person sends two copies to the LGA office, and the LGA NTD coordinator sends the final copy to the state. The state enters data from school summary forms into an electronic database and prepares a report for the national program.

Evidence Action collects treatment data from schools different from those monitored during deworming to verify the accuracy of their reported data. The data audit tool collects seven elements from the treatment register and school summary forms; these include enrolment (male, female), treatment (male, female) for enrolled and non-enrolled children, and the drugs given. This was done for both STH and schistosomiasis. Two levels of verification are conducted: class treatment register vs. school summary form and school summary form vs. school data in the state database.

4.5.1 Class treatment Register vs. School Summary Form

The error rates determined from comparing the treatment registers against the school summary forms are indicated below **(table 5)**. These error rates refer to the proportion of schools where the absolute percentage difference between the class treatment register data and that of the school summary form was greater than 10%. For each element under comparison, the median is the middle value of the absolute percentage differences between

the treatment register record and the corresponding school summary form entry if these differences were arranged in ascending order. A high median implies that at least half of the schools have error rates equal to or higher than the observed median value, indicative of high errors in generating totals and summaries.

Table 5. Distribution of the percentage difference between data in class treatment registers and school summary forms

STH	Error Rate	Median
Enrolled Treated Male (n=36)	42%	5%
Enrolled Treated Female (n=36)	42%	3%
Enrolled Treated Total (n=39)	15%	0%
Non-enrolled Treated Male (n=27)	4%	0%
Non-enrolled Treated Female (n=27)	4%	0%
Non-enrolled Treated Total (n=68)	1%	0%
Schistosomiasis		
Enrolled Treated Male (n=39)	44%	1%
Enrolled Treated Female (n=39)	31%	0%
Enrolled Treated Total (n=39)	36%	1%
Non-enrolled Treated Male (n=28)	29%	0%
Non-enrolled Treated Female (n=28)	36%	0%
Non-enrolled Treated Total (n=39)	23%	0%

Only one of the 69 schools audited had all class entries within a 10% range of the corresponding school summary entries. Across the data elements, the observed error were as low as 1% to as high as 44%. Generally, error rates were higher for elements on enrolled children as compared to those of non-enrolled which may simply be due to the higher volume of data available for enrolled children.

To get a better picture of the distribution of these errors, the median is also reported. The median gives a picture of the magnitude of errors across the various elements in over half (50%) of schools. For eight of the indicated elements, over half of the schools did not have any discrepancy (median = 0) between the class treatment register elements and corresponding school form. Across all elements considered, the highest difference between the two data sources is 5%. Taken together, the high error rates indicate that there are large percentage differences between entries in the class register and school summary form, though these were noted for a small number of schools given the small median across all elements.

4.5.2 School Summary Form vs State Electronic Database

Element	*Error Rate*	*Median*
Enrolled Treated for STH – Male (n=54)	78%	45%
Enrolled Treated for STH – Female (n=54)	78%	55%
Enrolled Treated for STH – Total (n=54)	83%	46%
Unenrolled Treated for STH – Male (n=32)	53%	29%
Unenrolled Treated for STH – Female (n=33)	58%	63%
Unenrolled Treated for STH – Total (n=33)	58%	42%

The error rates across all elements are greater than 50%, with some as high as 83% indicating that state data managers over/under reported figures in the state electronic database by more than 50% of the original school summary form figures.

4.5.3 Discussion

The high error rates noted for the school level comparison indicate a need to strengthen the data management skills of head teachers to ensure they accurately report treatment figures. Future trainings should therefore place emphasis on the forms and reporting topic. .

5.0 Lessons Learnt

What worked well

1. The distribution of key training materials, such as teacher handouts, school summary forms, and treatment registers during teacher trainings indicates that the program's logistics supply chain performed as expected. The learnings from this should be cascaded to future deworming rounds. .
2. Topics on drugs and materials, health education, forms, and drug administration procedures were completely covered or partially covered in teacher training. This translated into deworming teams understanding the correct age group for deworming, drugs, and dosage. It shows that trainers provided detailed coverage of the MDA training content, likely enabling effective knowledge transfer.
3. A dosing tape or a make-shift dose tape was used in most schools treating for schistosomiasis. This suggests clear and accurate training on the importance of its use for administering praziquantel.
4. MDA procedures around registering children (both enrolled and non-enrolled) in the treatment register were correctly followed in 89-100% of monitored schools. This suggests that the trainings properly prepared teachers on registration and forms for deworming, and that trained teachers were taking the required steps to sensitize fellow teachers prior to Deworming Day.
5. Most parents of enrolled children were informed about deworming by a child. Teachers should continue to encourage children to share information with their

parents and friends. Town announcers and religious leaders were also key in sensitizing both parents of enrolled and non-enrolled children.

What needs to improve

1. SAE protocols were handed out to teachers in only 56% of the trainings monitored. However, the SAE protocol is required for both training and Deworming Day and the program should ensure this is available in future trainings.
2. Handwashing was observed in only 35% and 37% of schools treating for STH only or STH and schistosomiasis respectively; 55% of schools did not have handwashing facilities at all. The state team could consider ways for the schools to have make-shift handwashing facilities available in the schools on Deworming Day, or seek collaboration with WASH partners in the state to improve handwashing facilities and culture in schools.
3. During Deworming Day, 33% of schools noted absences. Correct registration of absent students should be emphasized among teachers in the deworming team, as this allows them to more effectively follow up for treatment on mop-up day.
4. This round of deworming featured a limited number of schools including non-enrolled children in the MDA with majority of schools indicating that that non-enrolled children would either not come or were not notified. This indicates that there is a need by schools in future rounds to create increased awareness within the community as regards including non-enrolled children in deworming.
5. Posters were provided during training for teachers to display in their schools. However, monitors only observed posters in 54% of schools; in the future, trainers can request teachers to improve the visibility of the poster as part of effective community sensitization.
6. The results from the data audit point to a need for stronger data management at lower levels. Across the six elements for which school summary data was compared to the state electronic database, error rates ranged from 53% to 83%. The state could also adopt a unique school identification system to ensure that these comparisons are accurate.

Conclusion

The monitoring exercise set out to assess the quality of the deworming program's training cascade, MDA, and data recording and reporting practices. The findings highlight several areas of success as well as aspects in need of improvement. Generally, material distribution, training topic coverage, and community sensitization performed with good results. Aspects requiring improvement include stronger advocacy at school level for treatment of non-enrolled children, better data management practices at both school level.

Evidence Action is committed to working with the state team to continue driving programmatic improvements that will ultimately contribute to eliminating worms as a public health problem for Ogun state's children.