

Deworm the World Initiative - Kenya

A Process Monitoring and Coverage Validation (PMCV) report for the eighth year of school-based deworming implementation in Kenya

Wave 1 2020

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For:

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Partners



GiveWell



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Glossary

AEO. Area Education Officer

CHEW. Community health extension worker

CHV. Community health volunteer

CSO. Curriculum Support Officer

ECD. Early childhood development

MDA. Mass drug administration

MOE. Ministry of Education

MOH. Ministry of Health

NSBD. National School-Based Deworming

SAE. Severe adverse events

SCDE. Sub-County Director of Education

SCMOH. Sub-County Medical Officer of Health

STH. Soil-transmitted helminths

1.0 Executive Summary

Kenya's National School-Based Deworming (NSBD) program carried out only one wave of treatment in its eighth year of deworming (2019-2020) due to the Ministry of Education's decision to close schools as a result of COVID-19.¹ Both enrolled and non-enrolled children, ages 2 to 14 years were targeted in 14 counties endemic for soil-transmitted helminths (STH) with 3 counties endemic for both STH and schistosomiasis. In total, approximately **3,750,751** children in **9,599** public and private schools were targeted for deworming.

Evidence Action monitors the key implementation processes before, during, and after each Mass Drug Administration (MDA) to assess the effectiveness of training and supply chain, adherence to deworming protocol, and treatment coverage to inform program design, and improvements. Evidence Action recruited an independent firm to collect data from a sample of 24 sub-county trainings, 46 teacher trainings, 198 schools on Deworming Day, and 565 parents. In addition, parents of 546 non-enrolled children and 5,979 enrolled children were interviewed over the phone after Deworming Day for coverage validation.

On average, 95% of expected schools were in attendance for teacher training, with 80% on-time for the sessions. The most common reasons cited for arriving late were fear of attending due to the school registration status (21%) and late invitations (14%). The topics best covered during training included information on worms, target population, and roles and responsibilities. In post-training interviews, at least 80% of participants responded correctly to questions about these content areas. Read more on training on [page 10](#).

Ninety-nine percent of monitored schools had received drugs prior to Deworming Day, and 92% of these schools had sufficient drugs to deworm all children on Deworming Day.² Further, 99% of participating schools had all the key materials, including drugs, monitoring forms, and tablet poles in schistosomiasis treating schools, on Deworming Day. Read more on drug and materials distribution on [page 14](#).

Overall, awareness of Deworming Day was higher among parents of enrolled children (80%) as compared to the parents of non-enrolled children (63%). Eight-six percent of parents indicated that they would be sending their children for deworming. Of the 14% of parents who would not send their children for deworming, 23% received information on deworming late, 21% indicated that their children were not in the

¹ <https://www.bbc.com/news/world-africa-53325741>

² Seventy-five percent of the schools that did not have sufficient drugs on deworming day were able to contact the CHEW or CSO to procure sufficient medicine to treat all children.

target age-group, 18% had a sick child, 12% had already dewormed, 12% were absent from school, 5% had other engagements and forgot about deworming, 4% indicated that children were already at school and would be dewormed, 3% that the school was not deworming, while the other 2% indicated that either they had no reason to deworm or deworming tablets were not enough. The main source of Deworming Day information cited by parents of both enrolled and non-enrolled children was their child (67% and 45%, respectively). Read more on awareness on [page 16](#).

The rate at which schools conducted deworming was high, with 95%³ of schools distributing tablets on Deworming Day. All teachers provided the correct albendazole dose, while the one school monitored for schistosomiasis treatment used the tablet pole for praziquantel dosing, and 94% transferred names from the class register into the treatment register before deworming. However, spoiled tablets were observed left on the floor in 4% of schools observed. Read more on drug administration on [page 17](#).

Due to COVID-19, coverage evaluation surveys were conducted⁴ between 2 months after the implementation to estimate program reach and surveyed coverage in comparison to treatment reports from schools. Coverage validation for STH, in Narok and Siaya, indicated that 84-85% of targeted children were offered the drug (program reach) across the two counties, and that 83% of targeted children swallowed the drug (surveyed coverage). Schistosomiasis treatment in Siaya was limited due to lack of drug supply, and surveys revealed low program reach and surveyed coverage⁵, at 8% each. The surveyed coverage for STH across the two counties (83%) surpassed the WHO threshold of 75%, which suggests that the deworming exercise was successful. Read more on coverage validation on [page 18](#).

Table 1: Key Performance Indicators

	Percent
Target schools represented at teacher training	95%
Target schools with adequate drugs during deworming	92%
Target schools utilizing at least one awareness activity or material ⁶	87%
Parents who report seeing or hearing about deworming through IEC deworming materials or word of mouth this round	75%
Target schools distributing tablets on Deworming Day - STH	95%

³ Due to the COVID-19 pandemic, 10 schools in Kirinyaga county were targeted but did not deworm, as they were not in session.

⁴ Phone surveys were conducted with parents in the communities surrounding the most attended school in the 30 randomly selected subunits, each from the two counties.

⁵ Only a small proportion of the overall schools treated for schistosomiasis and those that did used drugs supplies left over from 2019 because no new supply was available in 2020 due to supply shortages.

⁶ IEC deworming materials include posters

Target schools distributing tablets on Deworming Day - schistosomiasis ⁷	100%
Enrolled children present in school on Deworming Day	94%
Targeted children who report receiving unprogrammed deworming in the last six months	20%
Target population validated as swallowing albendazole tablets on Deworming Day based on coverage validation ⁸	83%
Target population validated as swallowing praziquantel tablets on Deworming Day based on coverage validation ⁹	8% ¹⁰

Conclusions: Overall, Year 8 wave one of deworming implementation was successful, highlighted by high training attendance, high post-training knowledge of teachers on worms and target population, drugs and drug administration, and side effects, and a good supply chain for STH with all key materials available in 99% of schools on Deworming Day. However, there were also challenges that should be addressed ahead of the next round of MDA, including more comprehensive coverage of topics by trainers in teacher training, working to mitigate stock shortages of praziquantel tablets, and increasing the reach of radio messaging for parents of non-enrolled children. The full summary of successes, challenges, and recommendations can be found on [page 23](#).

2.0 Background

Evidence Action provides technical support to the Government of Kenya as it conducts school-based deworming through MDA for school-aged children (SAC) in a bid to control parasitic worm infections. In 2020, the program completed one wave of treatment, targeting both enrolled and non-enrolled children, ages 2 to 14 years in 14 counties¹¹ endemic for soil-transmitted helminths (STH), with 3 counties also endemic for schistosomiasis.

Approximately **3,750,751** children were targeted to receive deworming treatment in both public and private primary schools and early childhood development (ECD) centres. Teachers were trained to properly administer deworming drugs through teacher training sessions.

⁷ Denominator is the schools that received drugs for schistosomiasis drugs

⁸ In year 8, CV was conducted only in Narok and Siaya counties in wave one, this statistics is an average of the validated coverage rates in the two counties.

⁹ Coverage evaluation for schistosomiasis treatment was conducted only in Siaya County, this statistic is the validated coverage rate.

¹⁰ This rate is reflective only of the small number of schools that treated schistosomiasis in 2020 using leftover tablets from 2019, due to supply shortages on praziquantel.

¹¹ The counties included Bomet, Busia, Kericho, Kisii, Kisumu, Kitui, Machakos, Makueni, Nandi, Narok, Nyamira, Siaya, Trans Nzoia, Vihiga.

Evidence Action recruited an independent firm, Vyxer Research Management and Information Technology Consultancy (REMIT Kenya), to monitor random samples of program activities to assess the quality of implementation, adherence to protocol, and supply chain effectiveness. During this round, monitors observed 24 sub-county trainings, 46 teacher trainings, 198 schools on Deworming Day, and interviewed 546 parents, and 6,525 phone interviews for Coverage Validation. Evidence Action designed data collection tools and sampling methods, and cleaned and analyzed the data from the above activities. The findings are presented in this report.

3.0 Methodology

3.1 Process Monitoring

Thirty-five percent (35%) of all sub-county trainings, 10% of all teacher trainings, and 2% of the schools deworming during Deworming Day were targeted for monitoring, which translated to a random sample of 24 sub county training sessions (out of 68), 47 teacher training sessions (out of 470) and 208 schools implementing deworming (out of approximately 8,949).

At every teacher and sub-county training session sampled, one trainer was interviewed, four participants (teachers and sub-county officials, respectively) were interviewed before the training, and four participants were interviewed after the training. The pre- and post-training interviewees were systematically sampled so that every third participant to arrive at the venue was interviewed pre-training and every third participant to receive training materials at the end of the session was interviewed post-training.

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

1. Head teachers, to assess their knowledge of deworming, deworming preparedness, mobilization, and availability of deworming materials.
2. A teacher, to ascertain their knowledge of deworming and the activities they conducted to prepare for MDA.
3. One parent who brought their child for deworming, to understand their experience with deworming.
4. Three children (two enrolled in the class register and one non-enrolled child). This was conducted in different classes that were randomly selected.
5. CHEWs in communities near deworming schools, for feedback on Deworming Day and serious adverse events (SAEs) referrals.
6. To assess the effectiveness of community mobilization and sensitization, two randomly selected parents of children enrolled in a nearby school and one parent of a non-enrolled SAC were interviewed.
7. Finally, monitors observed one class as deworming occurred to assess adherence to guidelines, such as recording of treatment and administration of the right dosage to the correct age-group. Monitors also made observations to assess

school infrastructure, including WASH facilities, presence and location of sensitization materials, and where deworming took place.

3.2 Coverage Validation

Due to COVID-19, coverage evaluation surveys were conducted between 1.5 to 2.5 months after the implementation of the school-based deworming in two randomly selected counties - Narok and Siaya. These surveys were conducted after wave one with the purpose of validating coverage within the county, evaluating reported treatment data, and identifying reasons for non-compliance. Narok and Siaya counties were treating for both STH, with the former also planned to treat for schistosomiasis. Due to the COVID-19 pandemic, community phone surveys based on WHO coverage evaluation guidelines were administered. A total of 6,525 children were surveyed through interviews with their parents from the two counties using a two-stage probability proportional to estimated size (PPES) sampling design. Please see the comprehensive [CV report](#) for further detail on coverage validation methodology for Wave 1. **Table 2** below shows the targeted and achieved sample sizes for the monitoring activities.

Table 2: Process monitoring targeted and actual sample sizes

Monitoring activity	Population	Target sample size	Actual sample size
Sub-county and teacher training			
Total number of sub-county trainings	68	24	24
Total number of teacher training sessions	470	47	46
Pre-training teacher interviews		188	180
Post-training teacher interviews		188	184
Pre-training sub-county interviews ¹²		96	95
Post-training sub-county interviews ¹³		96	96
Post-training interviews with CHEWs		72	72
Deworming Day			
Schools deworming	8,949	208	198
Head teachers interviewed		208	198 ¹⁴
Parents to enrolled children		416	391 ¹⁵
Parents to non-enrolled children		208	174 ¹⁶
Children interviewed	3,606,106	624	591
Coverage Validation			

¹² Interviews were with sub-county officials mainly area education officers (AEOs) and DivPHOs (Division public health officers). Excluding CHEWs

¹³ Excluding CHEWs

¹⁴ Due to the COVID-19 pandemic, 10 schools in Kirinyaga were targeted but never monitored, as they were not in session.

¹⁵ Some monitors were unable to find a single parent to an enrolled child to interview

¹⁶ Some monitors were unable to find a single parent to a non-enrolled child to interview

Household/parent interviews		2,250	2,234
Children interviewed		3,483	6,525 ¹⁷

4.0 Results

4.1 Review of Sub-county and teacher trainings

Prior to deworming, training is provided to both health and education officials from sub-county and ward levels. The officials trained in sub-county training then act as trainers during teacher training. SMS (87%), phone calls (61%), and social media (41%) were the most common means by which teachers reported being invited to training. All (100%) observed sub-county training and 91% of teacher training sessions had an attendance sheet.

4.1.1 Attendance during trainings

On average, 34 teachers were expected to attend each teacher training, with an average of 97% of teachers in attendance, and 95% of expected schools represented. Of those attending the teacher and sub-county trainings, 80% and 77% of participants respectively arrived prior to training start. The fear of attending due to the school registration status (21%) and late invitations (14%) were the main reasons for late arrival at teacher training. The 95% school representation from training observation is comparable with the 97% of head teachers on Deworming Day who indicated that they either attended the training or sent someone else to represent the school.

4.2 Topic Coverage

Five topics were meant to be covered at both the sub-county and teacher training sessions, including information on worms and the target population, drugs and drug administration, side effects, recording and reporting forms, and the roles and responsibilities of various actors on Deworming Day.

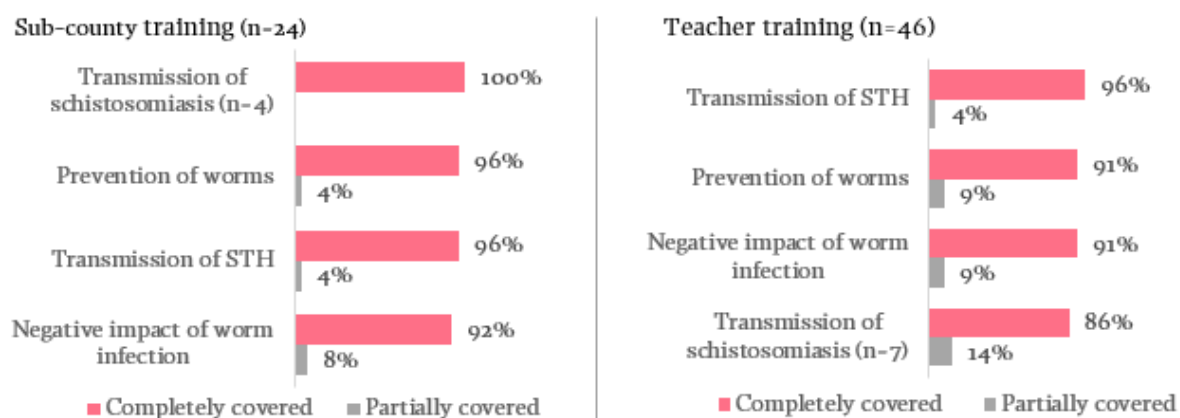
During training observations, the monitors used a checklist to indicate if a topic was covered completely, partially, not covered, or if wrong information was delivered. “Completely covered” means all the information and messages in a given topic were relayed according to protocol. The sections below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

¹⁷ Parent interview samples size was selected based on expected household size, with data collected on all SAC and PSAC in each household. The child sample was larger than expected due to a larger average household size than expected.

4.2.1 Information on worms and target population

Four aspects of the topic of worms are required during both sub-county and teacher training: transmission of STH, transmission of schistosomiasis, prevention of worms, and the negative impact of worm infection. Complete coverage of all these messages was lower in sub-county training (83%) than in teacher training (87%). Transmission of schistosomiasis and STH were the most covered aspects in the sub-county and teacher training (**Figure 1**).

Figure 1: Messages covered under “worms” during sub-county and teacher trainings



Post-training, 98% of sub-county officials and 99% of teachers could cite the type of worms being treated, both 2 percentage point increases from pre-training, suggesting that participants were already knowledgeable prior to attending the training.

In training for schistosomiasis-endemic areas, the target group of children aged 6-14 years was mentioned in all (100%) sub-county and 71% of teacher training sessions. Post-training, 93% of both sub-county officials and teachers cited the correct target age-group for STH, up from only 57% and 47% pre-training.

While all (100%) sub-country trainers and 98% of teacher trainers emphasized the importance of not deworming sick children, children with a history of certain health conditions were only covered in 46% of sub-county training and 54% of teacher training sessions. Other eligibility exclusion factors for schistosomiasis-focused training (children shorter than 94cm and any children under 6 years) were mentioned in only 17% of sub-county training and 13% of teacher training sessions. Given the sensitivity of schistosomiasis treatment, emphasis should be put on the exclusion criteria, which could be done using a demonstration to teachers.

Post-training, 3% of teachers indicated that they would deworm sick children present on Deworming Day, which should be addressed in future training.

4.2.2 Drugs and Drug Administration

Coverage of key aspects of drug administration was considerably higher at sub-county training. All aspects of this topic were covered in at least 96% of sub-county training, compared to at least 57% of teacher training.¹⁸ None of the messages in the teacher training had a higher corresponding coverage than that noted in the sub-county training. Critically, 3 of the 7 teacher training sessions (43%) for schistosomiasis did not completely cover information on the schistosomiasis drug (praziquantel) nor its dosing. **Table 3** summarizes the coverage of other messages under this topic.

Table 3: Messages on drug administration covered during the sub-county and teacher trainings

MDA practice	Coverage (Completely and partially covered)		Post-Training Knowledge	
	Sub county training (n=46)	Teacher training (n=95)	Sub county training (n=46)	Teacher training (n=95)
STH drug is Albendazole	100%	100%	100%	99%
One Albendazole tablet to be given to each child	100%	100%	100%	100%
Schistosomiasis drug is Praziquantel (n=7)	100%	57%	100%	100%
Dosage for schistosomiasis is one to five tablets, depending on height (n=7)	100%	57%	94%	92%
Register enrolled children prior to Deworming Day and non-enrolled children on Deworming Day, prior to treatment	100%	100%	N/A	N/A
Ensure that child has eaten prior to administration of praziquantel drugs (n=7)	100%	86%	100%	92%
Drugs must be stored in a clean, safe, dry and cool location	96%	91%	N/A	N/A
Under the program, all drugs are free, safe and effective	96%	96%	N/A	N/A

From post-training interviews, all (100%) participants in sub-county training knew the correct drugs used for STH and schistosomiasis treatment, with increases of 7 and 14 percentage points, respectively from pre-training. Post-training knowledge of drugs used to treat schistosomiasis and STH was also very high among teachers, as

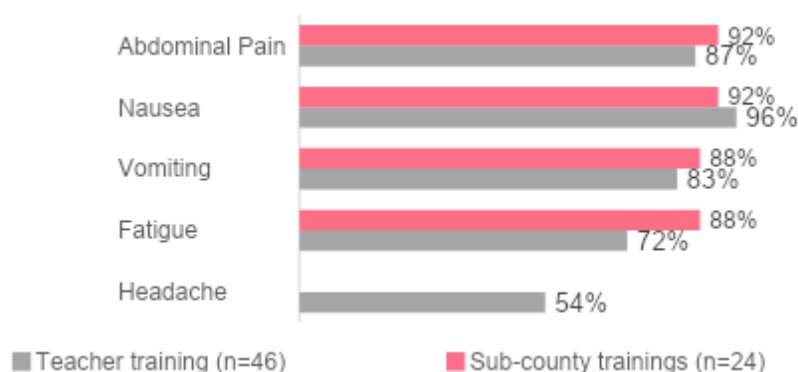
¹⁸ The areas of lowest topic coverage were with regard to Schistosomiasis treatment, which only took place in 7 of the 95 training sessions.

100% (39 percentage point increase) and 99% (19 percentage point increase) of teachers responded correctly, respectively. Large proportions of participants from both training types (sub-county and teacher) knew the correct dosage; 100% for STH and between 92% and 94% for schistosomiasis.

4.2.3 Side effects

Trainers provided information on potential side effects and Serious Adverse Events (SAEs) to prepare participants to manage such situations. Individual side effects were mentioned in at least half (50%) of both sub-county and teacher training sessions, with abdominal pain and nausea mentioned the most (**Figure 2**).

Figure 2: Messages on side effects



Information on steps to take in the event of SAEs were covered in 91% of teacher training, and 88% of sub-county training. Contact details of designated Community Health Extension Workers (CHEWs) to assist in the event of any SAE were circulated in 85% of teacher trainings, despite 95% of CHEWs indicating that they had shared their contacts with area education officers (AEOs) and/or curriculum support officers (CSOs). On Deworming Day, 23% of teachers indicated that they did not have contact details of CHEWs.

Post-training, all (100%) participants at sub-county training and 97% of teachers could name at least one possible side effect, increases of 1 and 11 percentage points from pre-training, respectively. Additionally, all (100%) sub-county officials and 92% of teachers indicated that they would feed children prior to administering praziquantel, to minimize potential side effects. On the other hand, 20% of teachers did not know that CHEWs were available to support the management of potential SAEs.

4.2.4 Recording and reporting forms

Teachers use forms MOH 517A, 517B, and 517C to record treatment at class and school levels, and should be trained comprehensively on how to fill them. Forms 517D and 517E are subsequently filled by sub-county and ward officials to compile data from the former. Form filling practice was observed in more sub-county trainings (at least 75%) than teacher trainings (at most 59%, **Table 4**).

Table 4: Heat map showing messages covered under recording and reporting forms

		Complete and partial coverage	
		Sub-county training	Teacher training
Filling of STH forms	517 A	100%	59%
	517 B	96%	59%
	517 C	98%	59%
	517 D	100%	-
	517 E	96%	-
Filling of schistosomiasis forms	517 A	100%	43%
	517 B	100%	43%
	517 C	100%	43%
	517 D	75%	-
	517 E	75%	-

Post-training knowledge of the forms teachers would be filling was high among sub-county officials (98%) and teachers (98%). However, 9% of teachers did not know that form MOH 517C summarizes forms MOH 517A and 517B, but on Deworming Day, 96% of interviewed teachers knew the purpose of Form 517C. The recipient of the form MOH 517C was unknown to 15% of teachers after training, while on Deworming Day this proportion had improved, to only 8%.

4.2.5 Roles and Responsibilities

The five key teacher roles and responsibilities during deworming were covered in at least 74% of teacher training sessions, while all four key CHEW roles were covered in at least 79% of sub-county training sessions - **Table 5**.

Table 5: Key roles and responsibilities of various actors covered at teacher trainings

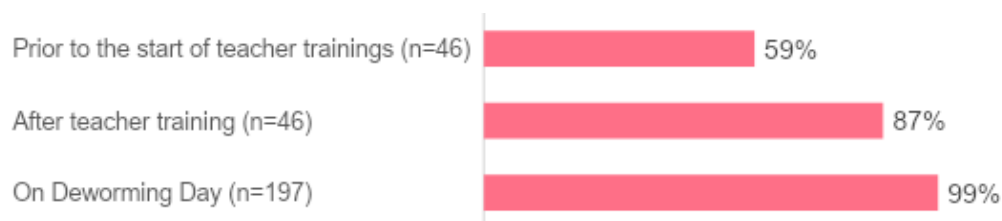
Roles and responsibilities	Percent
Key teacher roles related to community sensitization (n=46)	
Giving deworming tablets to children	98%
Recording treatment on monitoring forms	96%
Displaying posters within the school	83%
Conducting health education in class	78%
Discussing Deworming Day at school management meetings	74%
Key CHEW roles covered at sub-county training (n=46)	
Mounting posters	92%
Support teachers in case of any SAEs	92%
Discussing Deworming Day at health days and barazas	83%
Engage community health volunteers in respective community units	79%

4.3 Distribution of drugs and materials

Cascade implementation requires key materials (drugs, reporting forms¹⁹, and tablet poles) to be given out during teacher training where they are used as teaching aides and subsequently taken by teachers for Deworming Day. Albendazole and praziquantel tablets were only distributed in 54% and 50% of sub-county training sessions, respectively, an increase from 26% and 36% from 2019. However, dynamic local circumstances often dictate whether drugs can be distributed at SCT or directly to teacher training, but 76% of teacher training had drugs available at training start, and distribution was observed at some point in 98% of training sessions.²⁰ Reporting forms were distributed in all (100%) of teacher trainings, with availability noted in 96% of schools on Deworming Day. Four percent of schistosomiasis focused training sessions distributed tablet poles to teachers, but this distribution only targeted schools reporting lost tablet poles as well as new schools, given that in the previous deworming round, tablet poles had been distributed to all schistosomiasis treating schools. On Deworming Day, the only monitored schistosomiasis treating school had a tablet pole.

On Deworming Day, 99%²¹ of schools had the required materials, including drugs, reporting forms, and tablet poles where necessary, which points to a good supply chain for key materials (Figure 3).

Figure 3: Availability of key materials across the implementation cascade²²



However, 6% of schools did not use the reporting forms to record treatment on Deworming Day, while 2% of head teachers did not know how to submit reporting forms after deworming. These observations could negatively impact coverage reporting, as they may lead to incorrect or missing submissions, and should be emphasized during training.

¹⁹ Reporting forms include: MOH 517 A, MOH 517 B, and MOH 517 C

²⁰ From field reports, the 22% difference between pre-training drug availability and subsequent distribution is explained by materials being availed while the training was in progress.

²¹ Ninety-nine percent of STH focused trainings of schools on Deworming Day had all the required key materials, while this is at 100% for schistosomiasis focused trainings.

²² All key materials include drugs and reporting forms (treatment registers and school summary form) and tablet poles.

In post-deworming interviews with head teachers, 92% indicated sufficiency of the drugs available. Of the 8% of schools that reported a drug deficiency, 75% were able to obtain additional medicine to treat all children.²³ Of the 73% of schools that reported drug surplus, 66% planned to make returns to the Curriculum Support Officer or Division Public Health Officer (DivPHO) who would eventually turn them over to the Sub-county Medical Officer of Health, in line with the program advocacy. On the other hand, 19% planned a mop-up day, 7% indicated that they would give them to teachers, and 6% planned to distribute to non-enrolled children within the community.

4.3.1 Community sensitization materials

At the end of teacher training, posters were distributed to teachers in all (100%) trainings. However, Deworming Day observations indicated that 13% of schools did not have them displayed. Of those with posters displayed, 60% had at least two posters.

4.4 Community Sensitization

Community sensitization prior to Deworming Day is an evidence-supported factor for MDA success. On Deworming Day, monitors interviewed 546 parents (391 of enrolled children, 174 of non-enrolled children) to gauge awareness of the MDA, sources of MDA information, and willingness of parents to take or allow their children for deworming.

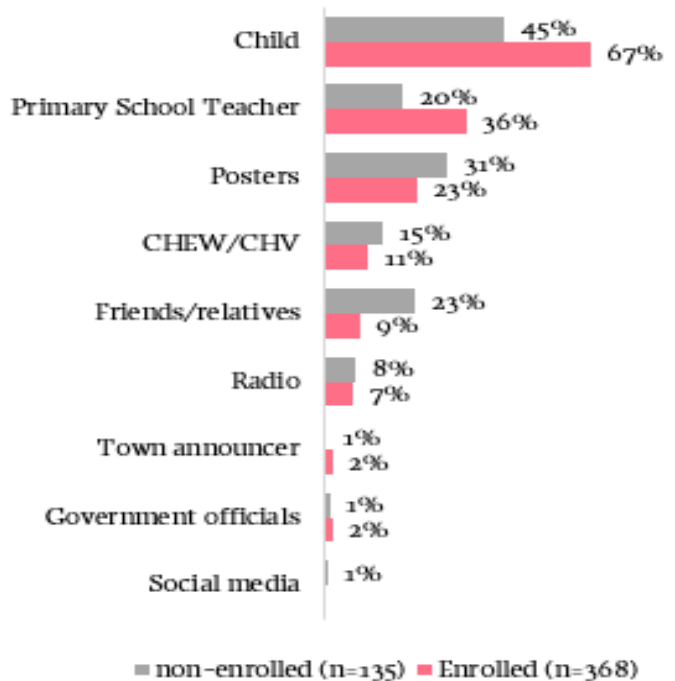
²³ Schools that lack sufficient deworming drugs liaise with CHEWs to get additional medicine so that all children can be dewormed. The CHEWs act as the link persons to the health facilities in their areas.

4.4.1 Implementation of community sensitization

Displaying posters within the school (75%) and encouraging children to share information with parents (45%) were the major activities that head teachers reported in preparation for Deworming Day. From parents' interviews, children (61%), primary school teachers (31%), and posters (25%) were the major sources of Deworming Day information (Figure 4).

Radio (65%), posters (50%), and children (46%) were the three preferred means of getting future Deworming Day information²⁴, cited by the parents of enrolled children. On the other hand, parents of non-enrolled children preferred radio (69%), posters (52%), barazas (44%), and children (37%).

Figure 4: Sources of deworming information cited by parents



4.4.2 Community knowledge

Prior to Deworming Day, only 75% of parents (80% for parents of enrolled children and 63% for parents of non-enrolled children) were aware of Deworming Day. Parents of enrolled children were more likely to have taken their child for deworming in the past, compared to those of non-enrolled children (83% vs. 62%). Sixty-nine percent of those interviewed were parents to enrolled children, while 31% were parents to non-enrolled children.

Knowledge of other program aspects (target age-group and worms treated) was slightly lower. Only 64% of parents of enrolled and 59% of parents of non-enrolled children were aware of the target age-group for STH, while 100% of parents were aware of the target age-group for schistosomiasis. Parents' knowledge of worm types was similar (67% for parents of enrolled children, 66% for non-enrolled children).

About 86% of parents indicated that they would send their children for deworming, including a higher proportion of parents of enrolled children (94%) than parents of non-enrolled children (56%). Most parents that wouldn't send their children for deworming received late information on deworming (23%), cited that children were not in the target age-group (21%), had a sick child/children (18%), had already been

²⁴ As part of the survey, parents were asked for their top three preferred methods of receiving future communication on deworming.

dewormed (12%), or were absent from school (12%). These reasons were similar for parents of both enrolled and non-enrolled children.

4.5 Deworming Day

Monitors visited 208 schools on Deworming Day to assess MDA procedures and the deworming team’s knowledge and capability to deliver the MDA. Of the 208 schools targeted, only 198 (95%) were monitored because ten schools in Kirinyaga county were planned to deworm after schools were closed due to the COVID-19 pandemic. Deworming was observed to have taken place in all monitored schools (198). Of those deworming, 97% had an attached ECD center, and opted to either have a school teacher (53%) or an ECD teacher (45%) treat the ECD children, while 2% had no specific plan to handle ECD children. Of the 97% of head teachers who reported having an attached ECD, 98% had sensitized teachers about the deworming exercise.

4.5.1 Preparedness for Deworming Day

Ninety-seven percent (97%) of head teachers reported that they or a teacher from the school had attended training within a month of the MDA. With regard to infrastructure, monitors observed that only 10% of schools lacked hand washing facilities, while 99% of schools had at least one toilet, and most (86%) had separate facilities for girls and boys.

4.5.2 Deworming Day Delivery

4.5.2.1 Adherence to MDA procedures

Monitors observed how MDA was conducted to assess if teachers adhered to guidelines. All (100%) of STH treating schools gave the correct dosage for albendazole. For praziquantel administration, the only²⁵ schistosomiasis deworming school monitored used a tablet pole to determine dosage, and also ensured that children had eaten prior to drug administration (**Table 5**). On the other hand, 17% of schools did not properly dispose of spoilt drugs and had them left on the floor.

Table 5: MDA procedures observed by monitors during drug administration (n=197)

MDA practice	Percent
Pre-deworming preparations	
School ensured that children had eaten prior to praziquantel administration (n=1)	100%
Drug Administration	
Teachers gave the correct dosage for Albendazole (1 tablet)	100%
Tablet pole was used to determine praziquantel dosage (n=1)	100%
Only eligible children for Albendazole and praziquantel were given drugs	94%
Spoilt tablets were properly disposed (n=42) ²⁶	83%

²⁵ Only a small proportion of the overall schools received supplies of PZQ for treatment of schistosomiasis and therefore few schools conducted schistosomiasis treatment, only one of which was monitored.

²⁶ Tablet fell on the floor, water spilled on tablet or child spit out the tablet

Recording treatment	
The teacher filled out all sections of MOH 517 A, section B (SCH)	100%
The teacher had transferred names from the class register to Form 517 A, section B prior to the deworming exercise (n=1)	100%
The teacher filled out all sections of MOH 517 A, section A (STH)	94%
The teacher had transferred names from the class register to Form 517 A, section A prior to the deworming exercise	94%

4.5.2.2 Management of side effects and referrals

Of the 148 CHEWs reached by the monitors either in person or over the phone, six (4%) reported observing SAEs, and 8 total instances were reported. SAEs observed by CHEWs included²⁷ headache (50%), vomiting (50%), nausea (17%) and abdominal discomfort (17%), but did not require hospital referrals. A similar proportion (4%) of CHEWs also reported instances of mild side effects. Mild side effects included headache (100%) and vomiting (100%).

4.5.3 Attendance Rate

The average Deworming Day attendance rate was 94%, with 95% of teachers indicating that they intended to deworm children that were absent once they returned to school.

5.0 Coverage Validation

Coverage validation was conducted in two randomly selected counties, Narok and Siaya, during Wave 1 using a phone-based coverage evaluation survey. Please see the comprehensive [CV report](#) for further detail on coverage validation for Wave 1. Most interviews were completed with parents that were not members of the Board of Governors or Parent-Teacher Associations (91%), followed by BoG parents (5%), and PTA parents (3%). The majority of interviews were conducted on the first attempt of calling (83%), suggesting that contact information was accurate and most parents were receptive to the call. Ninety-five percent of parents reported that all children from the household were present during the time of the interview. Further, 15% of the children about whom parents responded were non-enrolled; with 13% in Narok and 15% in Siaya, compared to reported net enrollment rates of 80% in Narok and 90% in Siaya. See more detailed descriptive statistics in **Table 6**.

Table 6: Respondent demographic information

	Narok (N = 3,133)	Siaya (N = 3,865)	Overall (N = 6,998)

²⁷ Some children had an incidence of more than one SAE or side effect

Type of respondent			
Board of Governors member	7%	4%	5%
PTA member	4%	3%	3%
Parent (not BoG or PTA)	90%	93%	91%
Call attempt at which respondent was reached			
First	77%	89%	83%
Second	11%	8%	9%
Third	10%	3%	6%
Fourth	2%	0%	1%
Enrolment status			
Enrolled	87%	85%	85%
Non-enrolled	13%	15%	15%
Household members aged 2-18 years physically present in this household at the time of this interview			
Present	96%	94%	95%

Note: Schistosomiasis treatment coverage validation took place in Siaya county alongside STH validation, which was planned to treat for both STH and schistosomiasis. However, due to insufficiency in drug supply for praziquantel very few schools in Siaya sub county, within Siaya county, were able to treat for schistosomiasis. After coverage validation had taken place, we received information that the few schools in Siaya that did treat for schistosomiasis had not received praziquantel through the Ministry of Health distribution, but rather had used leftover tablets from the previous round of deworming in 2019. Therefore, while we do have coverage validation results of schistosomiasis treatment in Siaya county on page 21, these do not provide evaluation of program coverage, as the distribution that took place was not through the mechanisms of the program.

5.1 STH Results

Table 7 shows the findings of the coverage validation phone survey for STH treatment. Parents reported that 85% of children were offered albendazole in Narok and 84% were offered in Siaya County. Further, 83% of children were reported to swallow the drug in front of their teacher in both counties. This rate suggests a successful round of STH deworming in both counties, above the WHO recommended therapeutic coverage rate of 75%. On the other hand, while the reported coverage²⁸ rates for both Narok and Siaya are outside the confidence intervals of the surveyed coverage²⁹, they are still within 10 percentage points of this interval indicating that the reporting systems are working moderately well, but there is still room for improvement to guard against under-reporting. Further, due to the mode of data

²⁸ Reported coverage - proportion of children within the program area whom head teachers reported as having taken the drug.

²⁹ Surveyed coverage – proportion of children interviewed who indicated that they swallowed the drug.

collection for this coverage survey (over the phone), these results could indicate that parents slightly over reported the rates at which their children swallowed the deworming drugs.

Table 7: Coverage validation results for STH treatment

Category	Program reach			Surveyed coverage			Reported Coverage	Number of children
	Mean (%)	95% CI lower bound	95% CI upper bound	Mean (%)	95% CI lower bound	95% CI upper bound		
Overall								
Narok	85%	84%	86%	83%	82%	85%	78%	2,970
Siaya	84%	82%	85%	83%	82%	84%	78%	3,555
Results by gender								
Narok	Male	84%	82%	86%	83%	81%	85%	1,585
	Female	86%	84%	88%	84%	81%	85%	1,385
Siaya	Male	84%	82%	85%	84%	82%	85%	1,733
	Female	83%	82%	85%	83%	81%	85%	1,822
Results by enrollment status								
Narok	Enrolled	91%	90%	92%	89%	88%	90%	2,711
	Non-enrolled	25%	20%	30%	25%	20%	30%	259
Siaya	Enrolled	89%	88%	90%	89%	88%	90%	3,268
	Non-enrolled	17%	13%	22%	17%	13%	22%	287
Results by school type³⁰								
Narok	Public	91%	90%	92%	89%	88%	90%	2,506
	Private	88%	83%	92%	86%	81%	91%	205
Siaya	Public	90%	89%	91%	89%	88%	90%	3,170
	Private	79%	69%	86%	79%	69%	86%	98

Results disaggregated by gender and school type were consistent with the overall results, as at least 79% of respondents in the different categories offered the drug (program reach), as well as reporting to swallow it (surveyed coverage). However, when disaggregated by enrollment status, we find that non-enrolled children were offered the drug (25% in Narok and 17% in Siaya) and swallowed the drug at significantly lower rates (25% and 17%, respectively) than enrolled children.

³⁰ Disaggregation by school type includes only enrolled children.

5.2 Schistosomiasis Results

As mentioned above, it is important to note that in Siaya County only a small proportion of the overall schools in Siaya sub county distributed praziquantel for treatment of schistosomiasis during the first round of implementation in 2020. The few schools that did distribute used leftover drugs from the previous round of deworming in 2019. While this information does not allow us to evaluate program coverage of schistosomiasis treatment, it does provide insight into treatment reporting accuracy.

Table 8 shows coverage validation findings for schistosomiasis treatment coverage. Both the program reach and surveyed coverage were low, at 8% each. The reported coverage for Siaya is outside the confidence intervals of the surveyed coverage, but still within 10 percentage points of this interval indicating that the reporting systems are working moderately well, but there is room for improvement to guard against under-reporting.

Table 8: Coverage validation results for schistosomiasis treatment³¹

Category		Program reach			Surveyed coverage			Reported Coverage	Number of children
		Mean (%)	95% CI lower bound	95% CI upper bound	Mean (%)	95% CI lower bound	95% CI upper bound		
Overall									
Siaya		8%	7%	10%	8%	7%	10%	6% ³²	2,063
Results by gender									
Siaya	Male	9%	7%	11%	8%	7%	10%		966
	Female	8%	7%	10%	8%	7%	10%		1,097
Results by enrollment status									
Siaya	Enrolled	9%	8%	10%	9%	8%	10%		1,908
	Non-enrolled	0%	0%	2%	0%	0%	2%		155
Results by School Type									
Siaya	Public	9%	8%	11%	10%	9%	12%		1,859
	Private	4%	0%	14%	4%	0%	14%		49

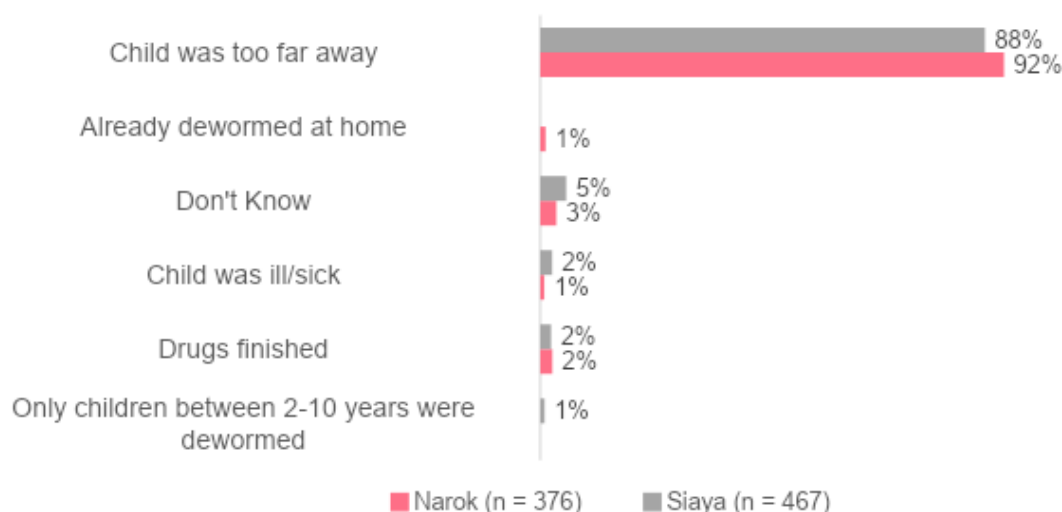
³¹ This data represents only the treatment for schistosomiasis which took place in Siaya sub county. This treatment took place only in schools that had leftover praziquantel tablets from the previous round of deworming in 2019. The MoH did not distribute praziquantel supply to Siaya county in 2020 due to supply insufficiencies, therefore these rates are not a reflection of program treatment coverage for schistosomiasis treatment.

³² Including only Siaya sub county of Siaya county.

5.3 Reasons for non-compliance

Compliance rates (proportion of children who were offered the drug that swallowed it) across both treatment types were high for both treatments (99% for both STH and schistosomiasis), in line with compliance observed in 2019. **Figure 5** presents the reasons Albendazole was not given as reported by parents. The main reason was that the child was too far away from school at the time of the MDA, with 92% of children reporting such in Narok and 88% in Siaya. When disaggregated by enrollment status, it is of note that 99% of non-enrolled children who reported not being offered the drug were reported to be too far away, whereas 80% of enrolled children were not offered the drug for this reason. This may suggest that proximity to a school is a key factor in program reach and coverage, and may especially be the case for non-enrolled children.

Figure 5: Reasons Albendazole was NOT given

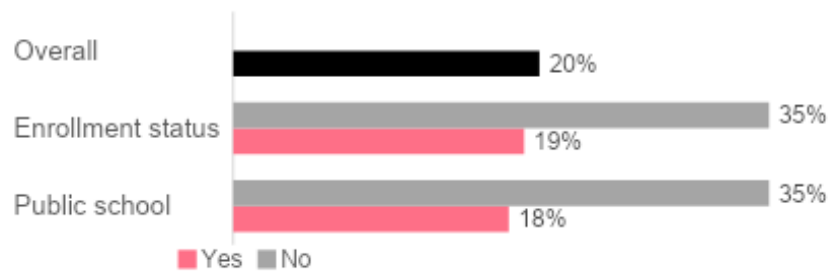


On the other hand, the majority of respondents (48%) did not know why praziquantel was not given to children, likely due to the drug supply issues previously noted. Others indicated that they were too far away (44%), that drugs ran out (4%), later drug administration (3%), and being underage (1%).

5.4 Unprogrammed deworming

Twenty percent (20%) of respondents reported having been dewormed outside the scope of this MDA, at least six months prior to Deworming Day. This rate is similar to the 2019 rate of 20%. By county, Narok (29%) had a higher rate of children whose parents reported unprogrammed deworming in the last six months, compared to Siaya (14%). Further, **Figure 6** shows that children that attend private schools or who are not enrolled in school are more likely to have received unprogrammed deworming than their public school or enrolled counterparts.

Figure 6: Unprogrammed Deworming by School type and Enrollment status



The majority either took these from the health facility (39%), pharmacy (36%), or at home (25%). Additionally, the disaggregation by enrollment status and age group indicated that the majority were enrolled (86%) and between 6-14 years (62%). Further, 77% of those who received unprogrammed deworming also reported being given a deworming tablet on Deworming Day.

6.0 Recommendations

6.1 What worked well

1. Training was generally well conducted:
 - a. Overall teacher training attendance was high (97%), with the majority of participants in both teacher and sub-county trainings arriving on time, implying that the program was able to effectively mobilize attendees.
 - b. Post-training knowledge of key messages under all the topics covered were high (at least 80%), which indicates effective delivery of core content by trainers.
2. Key steps of drug administration and treatment recording were well performed on Deworming Day, as exemplified by:
 - a. All (100%) observed teachers provided the correct albendazole dosage as well as used the tablet pole to determine praziquantel dosage.
 - b. Transferring names from class registers to treatment registers and filling out all sections of the treatment forms was noted in 94% of schools.
3. Sanitation facilities were generally available with toilets in 99% of schools, and hand washing facilities in 90% of schools.
4. The supply chain was largely effective. Required materials (reporting forms, tablet poles, and drugs) were available in 99% of observed schools on Deworming Day.
5. The results from the coverage validation survey for STH were positive:
 - a. Both Narok (83%) and Siaya (83%) counties surpassed the WHO recommended therapeutic coverage rate of 75% for STH.
 - b. Compliance rates (those who received the drug that swallowed it) were high, at 99% across counties and treatment types.

- c. Overall compliance was high with 99% of those offered both drug types reportedly swallowing.
- 6. The remote coverage validation pilot was also a success and provided key learnings for remote surveys in the future:
 - a. While treatment coverage rates were not validated, they were within a reasonable range of those from CV, and the difference is in a similar range to previous years.
 - b. The remote-based approach to coverage validation led to a reduction of approximately 25% to the expected budget for in-person CV.
 - c. Sources of bias to the data collection were sufficiently addressed in design and analysis, and did not lead to major differences from the treatment data.
 - d. The logistics and implementation of the novel coverage validation design were successfully completed, with no major challenges to completion of the surveys.

6.2 What can improve

1. There was a general disparity in topic coverage between the sub-county and teacher training, with coverage higher at the sub-county training sessions. Some of the areas highlighted below relate to gaps noted from the teacher training, and underline the need for comprehensive topic coverage at teacher training in future rounds.
 - Form filling was limited to 59% of teacher training compared to at least 75% of sub-county training sessions.
 - Post-training, the available support from CHEWs in SAE management was unknown to 20% of teachers, a finding that may be attributed to the 21% of training sessions that did not mention this.
 - Trainers need to emphasize the need to not deworm children with a history of certain health conditions as this was only mentioned in 46% of sub-county training and 54% of teacher training.
2. A quarter (25%) of all interviewed parents were not aware of Deworming Day, and 63% of parents of non-enrolled children were not aware. This likely translated to only 56% of parents to non-enrolled children planning to take their children for deworming. Similarly, coverage validation results for STH treatment revealed a low reach among the non-enrolled population. The program may consider sensitization strategies to increase awareness of the Deworming Day and understanding of key messages among parents to non-enrolled, as well as the possibility of more widespread use of radio as this topped (66%) both groups of parents preferred sources of information. In addition, the program should consider mechanisms to ensure that the timing of community sensitization takes place early enough to encourage attendance on deworming day.
3. A few key practices for Deworming Day may need to be emphasized in future trainings:

- Use and submission of reporting forms. Six percent of schools did not use the reporting forms to record treatment on Deworming Day, while 2% of head teachers did not know where to send reporting forms post-deworming. These could affect coverage reports.
 - Contact details of key personnel in the deworming exercise need to be widely shared. Fifteen percent of teachers did not have CHEW contact details, which could be problematic in the event of any SAEs.
 - Proper disposal of spoilt tablets. Monitors observed spoilt tablets left on the floor in 17% of schools.
 - Steps to take as a result of drug deficiency during MDA and management of post-deworming drug surplus needs to be clarified as head teachers gave varied responses about how these should be handled.
4. During this round of treatment only one schistosomiasis treating school among those originally sampled was monitored by the MLE team. This primarily owed to the uncertainty regarding drug availability at the time of planning, with drugs available sufficient to deworm only a few schools. As this instance was unprecedented, it is important for both the DtWI program and MLE going forward to have discussions regarding streamlining communications pertaining to any changes to ensure sufficient samples are monitored.