



Independent Monitoring of Ethiopia's School-Based Deworming Programme Year 1, Round 1

Final Report

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Diseases, Arba Minch University/College of Medicine & Health Sciences, and
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I. Executive Summary

In November of 2015, Ethiopia's Federal Ministry of Health (FMOH) officially launched the first national school-based deworming programme targeting both enrolled and non-enrolled school-age children. Ethiopia has one of the highest burdens of neglected tropical diseases in the world, with over 17 million school-aged children at risk for schistosomiasis and just over 23 million school-aged children at risk for soil-transmitted helminthes (STH). The November 2015 MDA campaign targeted treatments of approximately 6.4 million children for schistosomiasis and 16.5 million for STH in a total of 461 woredas.

The following report details the results of the independent monitoring pilot activities conducted during the first round of deworming within the first year of the programme. The Collaborative Research and Training Center on Neglected Tropical Diseases at the Arba Minch University was contracted by the FMOH to conduct an objective, non-biased evaluation of the programme by observing and reviewing the following:

- Quality and impact of the teacher and health extension worker (HEW) woreda-level trainings
- Extent and impact of the planned community sensitization and mobilization activities
- Implementation quality of deworming in schools
- Level of knowledge and experiences of treatment recipients and the knowledge, attitudes, and practices (KAP) of key participants to the programme.

This data will be used to inform programme design, facilitate innovation and refine delivery leading to a sleeker programme each round. Since this was the first round of process monitoring in Ethiopia, lessons learned regarding the independent monitoring activities, tools and experience itself will also be taken into full consideration when adjusting the strategy, tools, and approach for the following round and also for the second year of the programme.

II. Key Findings

a. Key findings for the SCH/STH National Control Programme

- The number of trainings and schools actually monitored reduced during implementation due to various challenges including security issues, lack of political commitment to prioritize deworming within the set timeframe, and at times, poor communication lines between the FMOH and certain

Regional Health Bureaus. As a result, 4 regions (Gambella, Harar, Tigray and Somali) were not included in this evaluation and the actual number of schools monitored reduced from 265 to 143 (54%).

Woreda-Level Trainings

- Out of the fifteen observed woreda-level training events in seven regions, 87% of the targeted kebeles were trained and 13 out of 15 trainees used the FMOH suggested Facilitator Guide.
- However, during the trainings, pre-tests were administered only in Amhara Region and none of the regions administered post-tests.
- Three out of the fifteen districts (i.e. one district from Amhara, Oromia and SNNPR) provided the entire basic package of materials necessary to conduct the woreda-level trainings. Form A1, School Drug Distribution Form for School-Age Children (i.e. treatment recording form), was only distributed in three out of the fifteen training events and Form A2, School Drug Distribution Summary Form for Enrolled SAC, was distributed in six out of the fifteen training events. Form A3, School Drug Distribution Summary Form for Non-Enrolled SAC, was distributed in seven out of fifteen training events. As the recording and reporting forms build on one another for data aggregation, it is necessary to supply all the forms for practical exercises.
- None of trainings implemented the deworming day role play as recommended by the FMOH. All of the trainings were lecture based.
- Not captured in the IM tools but important to note, due to insufficient numbers of trainers available to facilitate woreda-level trainings, trainings were postponed significantly in some regions.
- Supportive supervision was only observed to be conducted in 1 out of the 15 woreda-level trainings.

Deworming Preparedness and Implementation

- 143 primary schools were randomly selected to evaluate their level of preparedness for deworming activities and the quality of deworming implementation. Out of the 143 schools' deworming teams interviewed, 87.4% of the HEWs recently attended the SCH/STH woreda training, 78.3% headmasters attended and only 38.4% teachers attended. Low attendance of teachers was most likely due to the fact that in many woredas only the headmasters were invited to participate. The majority of the deworming teams consisted of 2 people, the headmaster and the HEW.
- Prior to deworming day, 119 schools out of the total 143 (83.2%) interviewed, conducted some sort of community and/ or school mobilization activities, of which 79 schools said that they encouraged children to share deworming day information with their parents.
- All schools had ample drug stock of MEB and PZQ (all but 4 schools planning on treating for SCH).

- 81 (58.7%) of schools observed, asked children if they were sick or on medication prior to commencing deworming administration. Of those 81 schools, 44 schools did not treat the children who claimed they were ill or on medication on deworming day and only 18 of the 81 schools recorded the children's names for treatment later.
- 27.3% of the first fifty children treated for STH in Addis Ababa and 23.7% treated in Oromia were not observed by the HEWs or deworming teams. The tablets were disbursed but the actual swallowing of them was not verified.
- Out of the 53 total schools targeted for treating SCH and observed, all had a standard dose pole, however, 34 out of the 53 schools (64%) schools correctly used the dose pole. Amhara and Oromia Region seemed to face the greatest challenge with the dose pole with 12 out of 23 (52.2%) and 5 out of 8 (62.5%) schools observed (respectively) implementing it incorrectly.
- 101 out of 143 (70.6%) schools planned to treat non-enrolled during deworming week at school, however, only 36 out of 143 (25.2%) schools observed treated non-enrolled.
- In 22.5% (31) of the schools observed, students manifested drug side effects after treatment of SCH and/ or STH. Severe Adverse Events were observed and recorded by monitors in 14 out of the 31 (45.2%) schools with four schools (three from Dire Dawa and 1 from Oromia) referring their SAEs to local health facilities.
- According to the independent monitors' observation, 41.9% of deworming teams were capable of managing side effects and treated cases properly.
- Supportive supervision was seen to be conducted in 61 out of 143 (42.6%) schools.

Quality of Community Sensitization and Peoples' Perceptions

- 43.1% (190 out of 441) of kebele community members randomly selected to be interviewed had heard of the current deworming campaign. Only half of those that heard of the campaign (81) could source where they received their information from with the majority claiming house-to-house mobilization (37) and loud speaker (26).
- Of the total 441 community members interviewed, 54.2% claim regular access to radio, 49.2% have regular access to a cell phone and 22% have regular access to TV. 28.3% did not have access to any of the three.
- Of the 177 (61.7%) enrolled SAC aware of deworming day, the majority (119, 67.2%) answered that it was their class teacher that provided them with the information. Furthermore, out of the 177 enrolled

SAC aware of deworming day, 135 (76.3%) of them then went home and told their parents about the upcoming deworming campaign.

- 77 out of 136 (56.7%) parents interviewed at school on deworming day reported that they had heard about the campaign prior to that day. The majority of parents received the message from their children.
- 72.9% of headmasters believe that it would be beneficial to reduce the number of deworming days by increasing the number of deworming teams per school and 72.4% thought that the community would allow teachers to administer deworming tablets to students

WASH Indicators

- 24 out of the 143 schools observed (16.8%) had and used a hand washing station of which 14 stations had soap or ash next to or near to it.
- 114 out of 143 schools (79.7%) had toilet structures separate for boys and girls. Among the schools having toilet structures, 75 out of 114 (65.8%) were pit latrines and 36 (31.6%) were improved pit latrines.
- All of the toilets were being used at the time of observation no matter the level of functionality.
- 38 out of the 114 toilet structures (33.3%) could be rated as clean and functional based on FMOH set standards.

b. Key findings for the next round of independent monitoring

There was a significant reduction in the sample size of schools monitored on deworming day due to security, communication, planning, etc., however it is also important to note that the majority of schools completed their deworming in four days or less. Therefore, during the next round of process monitoring the number of days observing schools should be reduced from five days (i.e. the entire deworming week) to the first three days of deworming as planned for the woreda to aid in maintaining the targeted sample size.

Based on implementation experience, putting the process monitoring tools to test and then in aggregating and analyzing data, AMU has proposed some changes to each of the tools themselves which have been fully considered for the second round of process monitoring in April/May 2016.

III. Methodology

The evaluation of the programme processes has been designed as a cross-sectional survey at the woreda (district), kebele (village) and school-level using a set of questionnaires for data collection. Questionnaires were designed by Evidence Action and SCI (technical assistance providers to Ethiopia’s FMOH) using lessons and tested methods from the Kenya and India National Deworming Programme and adapting them to the Ethiopian-context.

Prior to all monitoring activities, training of supervisors and independent monitors was conducted over a three-day course at Arba Minch University, facilitated by the FMOH and technical assistance providers. Thirty-nine trained monitors and ten supervisors were then deployed to conduct a non-biased evaluation of the programme by observing and reviewing the:

- Quality and impact of the teacher and health extension worker (HEW) woreda-level trainings,
- Community sensitization and mobilization activities
- Implementation of deworming in schools
- Level of knowledge and experiences of treatment recipients and the knowledge, attitudes, and practices (KAP) of key participants to the programme

The sample size selection of monitoring events was guided by Table 1 below and modified according to time constraints as well as logistical and budget limitations.

Table 4. Sample size options of trainings and schools based on total number of targeted events, November 2015

Total number of events from which sample is drawn	Sampling options and corresponding statistical confidence			
	P (95%) - a (5%)	P (90%) – a (5%)	P (95%) – a (10%)	P (90%) – a (10%)
70 zonal trainings	60(86%)	56 (80%)	41 (59%)	35 (50%)
461 woreda trainings	210 (46%)	171 (37%)	80 (17%)	59 (13%)
20,280 schools	380 (1%)	266 (1%)	96 (0%)	68 (0%)

Considering the logistics of conducting independent monitoring across all 9 regions and 2 city administrations, 265 schools were planned to be monitored nationally over the 5-day deworming campaign. The zonal trainings were not monitored during this pilot due to time constraints and the number of woreda trainings to be monitored was drastically reduced to a total of 20 targeted trainings in

20 randomly selected woredas. The evaluation of community mobilization and awareness was planned to be conducted in the same woredas and kebeles randomly selected for the monitoring of trainings and schools. The number of trainings and schools actually monitored reduced during implementation due to various challenges including security issues, lack of political commitment to prioritize deworming within the set timeframe, and at times, poor communication lines between the FMOH and certain Regional Health Bureaus. As a result, 4 regions (Gambella, Harar, Tigray and Somali) were not included in this evaluation (see Table 2 for actual events monitored).

All monitored events were randomly selected from a list of planned events. The randomly selected lists of woredas and kebeles were not shared with the implementing partners prior to the actual monitoring.

Due to the cultural and operational differences of the regions, the National School-based Deworming Programme at this time benefited more from smaller sample sizes in each region verses larger samples in select regions. By monitoring each region, the results of this report would then better inform future regional planning and programme implementation strategies for consecutive rounds of MDA.

Table 5. Actual events monitored during Y1 R1, November 2015

Activity Type	Total No. of Events Y1 R1	Planned Events to be Monitored	Actual Events Monitored/ Observed
HEW & teacher woreda-level training	461	20	15 (75%)
Woreda- level community mobilization and awareness		20	15
Kebele-level community mobilization and awareness		265	152
Deworming in schools	20,280	265	143 (54%)
STH only schools			86
SCH + STH schools			57

Data collected was cleaned to check for its completeness, consistency and the presence of missed values and variables. Data was entered into Epi Info version 3.5.1 and exported to SPSS 20.0 for further analysis. Frequency, mean and standard deviation were used to summarize the data, and select tables and graphs have been used to present the data along with substantive narrative.

If any errors happened during the provision of medication to the children while events were observed, trained independent monitors and supervisors intervened as needed and as directed by the FMOH.

IV. Quality of Training

a. HEW and teacher training observation

Data was collected during fifteen observed training events in seven regions (see Table 3). A total of 440 kebeles were scheduled for training during these fifteen events and 87% of the total targeted kebeles were trained (384 out of 440 kebeles).

Table 6. Number of trainings events observed per region with treatment strategy, November 2015

Region	Total no. of HEW and Teacher trainings observed per region	Treatment Strategy		
		STH ONLY	SCH ONLY	STH + SCH
Oromia	4	3		1
Amhara	3	1		2
SNNPR	4	4		0
BG	1	0		1
Afar	1	1		0
Addis Ababa	1	1		0
Dire Dawa	1	0		1
Total	15	10		5

Supportive supervision was seen in one out of fifteen woreda-level training events and this happened to be in Addis Ababa. Almost all trainers were from the woreda health office and the ratio of trainer to trainees was 1:28-31. Except for one training which started at 8:30 am, all other trainings started after 9:00 am and before 11:00 am. On average the training lasted between 7 to 7.5 hours long.

A total of 1,293 health extension workers and teachers attended the training, among them 946 (73.2%) arrived before the start of the training, 281 (21.7%) arrived less than hour after the training began and only three participants arrived significantly late (i.e. 4+ hours after the start of the training). The FMOH assumes for planning purposes that there are an estimated 40 MDA schools per targeted district and one deworming team per school comprised of two teachers and one HEW. Therefore, the estimated total number of teachers and HEWs targeted to be trained in the 15 woreda trainings was 1,800. Given that estimation only 71.8% of the targeted trainees attended the training.

Pre-tests were administered only in Amhara Region and none of the regions administered post-tests. Therefore, there was no measured level of knowledge gained or internal evaluation of the training.

Lunch was not provided in any of the training sessions, however health breaks were provided in three out of the 15 districts. The FMOH advises the woreda trainings be one-full day in length and that health breaks

are budgeted for and provided. As of now, it is FMOH policy that the trainees are to pay for their own lunch as per diem is given to all.

Three out of the fifteen districts (i.e. one district from Amhara, Oromia and SNNPR) provided the entire basic package of materials necessary to conduct the woreda-level training of teachers and HEWs which includes stationary, the Deworming Guide for Teachers and HEWs and at minimum reporting Forms A1 through A3. The Deworming Guide was provided to the trainees in thirteen out of the fifteen trainings. Form A1, School Drug Distribution Form for School-Age Children (i.e. treatment recording form), was only distributed in three out of the fifteen training events and Form A2, School Drug Distribution Summary Form for Enrolled SAC, was distributed in six out of the fifteen training events. Form A3, School Drug Distribution Summary Form for Non-Enrolled SAC, was distributed in seven out of fifteen training events. As the recording and reporting forms build on one another for data aggregation, it is necessary to supply all the forms for practical exercises.

Most of the trainers (73.3%) did not use the Deworming Guide as a reference during the facilitation of the training, however thirteen out of the fifteen trainers did use the FMOH produced Facilitator Guide.

Table 4. Teaching methods implemented across woreda-level training sessions observed, November 2015

Variables	Lecture based	Discussion	Group work	Demo/ play	role	Other
Programme overview	14	2	0	0		0
Health education about worms	15	4	0	0		1
Disease distribution	14	3	0	0		0
Target population	15	0	0	0		0
Drugs and materials	13	2	0	0		0
Steps of drug distribution	15	4	0	0		1
Dosage pole	14	3	0	0		0
Side effects adverse reaction and management	15	0	0	0		0
Recording and reporting forms	13	2	0	0		0
Roles and responsibility	8	0	0	0		0

Almost all districts primarily used the lecture-based teaching method to pass information during the woreda-level trainings. In four districts, discussions were held during some of the sessions (see Table 4). None of the trainings included the deworming day practical session as in the suggested training agenda

to run through the proper set up of a deworming station and the steps of deworming administration including working with the reporting and recording forms.

Information passed during the training sessions observed varied in consistency. Below are lists of sessions and topics per session that were advised to be covered during the woreda-level training as per the FMOH's guidance with the frequency in which the topics were discussed and adequately addressed (using the level of content in the provided Deworming Guide as a benchmark reference).

Health Education: Definition of Worms, Morbidity, Prevention and Transmission

- 8 out of 15 observed trainings adequately covered definitions of worms and STH transmission
- 7 out of 15 trainings covered STH prevention and morbidity
- 3 out of 5 trainings (targeting both SCH + STH treatment) covered SCH prevention and morbidity
- 3 out of 5 trainings covered SCH transmission

District Prevalence and Treatment Strategy

- 10 out of 15 trainings explained whether the woreda was targeting treatment of STH, SCH only or both (STH and SCH)
- 13 out of 15 trainings explained the strategy of mass treatment based on WHO recommendations
- 4 out of 15 trainings shared baseline prevalence data of their respective districts
- 11 out of 15 trainings covered the benefits of deworming in schools
- 13 out of 15 trainings clearly communicated that all children between the ages of 5 and 14 years of age (enrolled and non-enrolled) are to be treated for STH (and SCH) during deworming days at school excluding those who are ill on deworming day

Roles & Responsibilities, Materials for Deworming day, and Drugs

- 8 out of 15 trainings covered the roles and responsibilities of the deworming team
- 5 out of 15 trainings covered the roles and responsibilities of the woreda health office
- 0 out of 15 trainings covered that Mebendazole was to be used for the treatment of STH (as districts claimed that everybody knew that Mebendazole is to be given for STH)
- 5 out of 5 trainings (targeting SCH treatment) mentioned that Praziquantel(PZQ) is to be used for the treatment of SCH and that one to five tablets of PZQ were to be administered per child depending on their height as measured against the WHO dose pole

- 9 out of 15 trainings clearly communicated that drugs used for deworming are free, safe and effective
- 5 out of 15 trainings covered appropriate drug storage while in the hands of the deworming teams at schools
- 6 out of 15 trainings completely communicated the list of materials necessary to complete a successful deworming administration as listed in the Deworming Guide

Community Mobilization

The duties of individuals and ways in which community sensitization and mobilization of target populations should be performed was discussed during the training events in some fashion.

- 6 out of 15 trainings taught that the responsibilities of the HEW in community mobilization included discussing deworming days and objectives of deworming with the Health Development Army
- 5 out of 15 trainings taught that the responsibilities of the HEW in community mobilization included facilitating the Health Development Army to go house-to-house
- 5 out of the 15 trainings discussed that it was the responsibility of the HEWs to share dates of planned deworming days and the objectives of deworming with community leaders
- 8 out of the 15 trainings highlighted that teachers should conduct health education in class
- 2 out of the 15 trainings highlighted that teachers should mobilize their students and encourage them to share deworming day information with their parents
- 0 out of 15 trainings highlighted that children should share deworming messages and be encouraged to bring other children to school for deworming
- 2 out of 15 trainings discussed the need for posters and banners to be distributed

Key messages to be disseminated by the deworming teams prior to deworming day to communities, students and parents were communicated to the trainees incompletely, however the three most frequently highlighted key messages were:

- Side effects and why side effects happen 8 (66.7%)
- Benefits of deworming children 8 (66.7%)
- Location, dates and time of MDA 7 (58.3%)

MDA Protocols and Procedures: Drug Administration, Recording and Reporting

- 7 out of 15 trainings taught that deworming should be done at the start of the school day to allow for observation
- 12 out of 15 trainings taught the correct arrangement of the drug distribution site
- 10 out of 15 trainings taught how to prepare Form A1 correctly and ahead of time copying the enrolled children's names from the class register onto the form
- 11 out of 15 trainings taught that all absences should be recorded in the class register and that all absent children should be treated on the day that they return to school
- 6 out of the 15 trainings taught that all necessary materials are to be in place prior to deworming administration
- 11 out of 15 trainings taught that the deworming teams should provide an orientation for students and children prior to deworming and highlighted specific messages that need to be passed to the children at this time
- 13 out of 15 trainings passed the information that sick children should not get treatment on deworming day and are to be given medicines later after they recover.
- 2 out of 5 trainings (targeting for SCH treatment) taught to ensure that the child has eaten before treating them with PZQ
- 3 out of 5 trainings (targeting for SCH treatment) taught how to organize and arrange children by height
- 13 out of 15 trainings taught to facilitate handwashing prior to treatment
- 13 out of 15 trainings taught how to register children on Form 1 prior treatment administration
- 3 out of 5 trainings had a dose pole available and covered how to use the dose pole completely and accurately
- 6 out of 15 trainings taught to give Mebendazole with water (and Mebendazole first with water for the STH + SCH districts)
- 1 out of 15 trainings taught not to force a child to swallow medicine under any circumstance
- 1 out of 15 trainings taught to check the child's mouth to make sure he/she has swallowed the drug administered
- 12 out of 15 trainings taught that all columns across Form A1 should be completed for each child as the drugs are being administered

- 3 out of the 15 trainings correctly covered all 11 steps of drug administration as written in the Deworming Guide
- 10 out of 15 trainings correctly taught how to use and complete Form A1: School Drug Distribution Form correctly (although only 3 trainings provided a copy of Form A1 to the trainees to look at during this session)
- 8 out of 15 trainings correctly taught how to use and complete Form A2: Distribution Summary Form for Enrolled SAC (6 trainings provided a copy of Form A2 to the trainees to look at during this session)
- 6 out of 15 trainings correctly taught how to use and complete Form A3: Distribution Summary Form for Non-Enrolled SAC (7 trainings had the actual form to look at and review)

SAE Management and Reverse Cascade of Drugs and Reports:

- 8 out of 15 trainings discussed the management of possible side effects
- 8 out of 15 trainings discussed placing children in a comfortable place to rest for the management of possible side effects
- 5 out of 15 trainings discussed the use of traditional remedies for nausea and vomiting
- 4 out of 15 trainings mentioned that side effects should be recorded on the reporting forms
- 11 out of 15 trainings discussed the management of Severe Adverse Events
- 11 out of 15 trainings taught that SAEs were to be referred to the local health facility
- 5 out of 15 trainings discussed logistics and timeline of the reverse cascade of remaining drugs
- 8 out of 15 trainings discussed that all Forms A2 and A3 and remaining drugs are to be returned to the local health center within 5 days after deworming
- 6 out of 15 trainings discussed that the health center is to summarize Forms A2 and A3 for all schools in the area into Form B and return it to the Woreda Health Office within 5 days (approx. 10 days after deworming)

In general, participants asked questions regarding:

- Side effects and SAE management for further clarification in 8 out of 15 trainings
- Reporting and recording forms in 7 out of the 15 trainings
- Drug distribution steps and protocol in 6 out of 15 trainings

b. Post-training participant interviews

Post-training participant interviews were conducted randomly, selecting three or more participants after each woreda-level training. 48 total participants were interviewed including 18 HEWs, 12 headmasters, 7 teachers and 11 woreda health and education officers. All of the participants interviewed attended the entire training and majority (58.3%) of the participants interviewed had prior knowledge on STH.

The following outcomes measure the level of knowledge transferred during the 15 woreda-level trainings monitored pertaining to types of worms, transmission, prevention, drugs to be used for the treatment, dosage, and possible side effects of STH and SCH.

- 36 out of 48 participants (75%) reported that STH was the type of worms covered in the training, 3 mentioned schistosomiasis/Bilharzia and 9 gave another answer other than STH or SCH.
- 29 out of 48 participants (60.4%) knew how STH was transmitted
- 34 out of 48 participants (70.8%) could list at least 2 ways to prevent STH infection and 21 out of 48 participants (43.8%) could list at least 4 ways to prevent STH infection
- 38 (79.2%) of the participants reported Mebendazole as a drug used for the treatment of STH
- 43 (89.6%) stated the dosage for treating STH is one tablet per child
- 48 out of 48 participants (100%) knew the target population for STH treatment
- 28 out of 48 participants (58.3%) could list 2 possible side effects following STH treatment
- 14 out of 17 participants (82.4%) selected from the STH + SCH woreda trainings reported praziquantel as the treatment of SCH
- 9 out of 17 participants (52.9%) knew how SCH could be prevented
- 14 out of 17 participants (82.4%) reported praziquantel as the drug used for the treatment of SCH
- 15 out of 17 participants (88.24%) reported the dosage for treating SCH as according to the tablet pole (2 of them said one tablet per child)
- 17 out of 17 participants (100%) knew the target population for SCH treatment
- 11 out of 17 participants (64.7%) could list 2 possible side effects following SCH treatment
- 10 out of 17 participants (58.8%) correctly answered that food before PZQ treatment would minimize possible side effects

The following measures knowledge transfer and preparedness for deworming events among the participants interviewed:

- 42 out of 48 participants (87.5%) knew the set deworming dates for their woreda immediately following the training
- 32 participants (66.7%) reported that headmasters are responsible for community sensitization and mobilization
- 39 out of 48 participants (81.3%) were able to provide a list of at least two planned activities for community mobilization of their kebele immediately following the training
- 13 out of 48 participants (27.1%) answered that they would reach out to the Health Development Army for community mobilization prior to the MDA
- 47 out of 48 participants (97.9%) answered that deworming will be done at schools or in classrooms
- 41 out of 48 participants (85.4%) correctly answered that sick children should not be treated on Deworming day
- 39 out of 48 participants (81.2%) correctly answered that children should be instructed to chew Mebendazole
- 14 out of 17 participants (82.4%) selected from the STH + SCH woreda trainings correctly answered that MEB should be administered before PZQ
- 10 out of 48 participants (20.8%) correctly answered that Form A1 is to be used to record drug administration and treatments on Deworming day
- 31 out of 48 participants (64.6%) 27 correctly answered that the school treatment summary forms are to be completed and sent to the health center five days after the deworming week

V. Quality of Deworming

a. Level of preparedness

143 primary schools were randomly selected to evaluate their level of preparedness for deworming activities and the quality of deworming implementation. The level of preparedness was assessed by interviewing the main deworming team members at each school on Deworming day.

Each school's headmaster was interviewed concerning their preparedness for the upcoming MDA campaign. Of the 143 total headmasters interviewed, 78.3% (112 out of 143) stated that they had participated in the most recent woreda-level training. In Afar and in Dire Dawa, about half of the

headmasters invited, attended the training, while in other regions there was between 80% and 93% turn out.

Table 5. Number of schools observed per region with treatment strategy, November 2015

Region	Total no. schools observed per region	Treatment Strategy		
		STH ONLY	SCH ONLY	STH + SCH
Oromia	27	18		9
Amhara	35	11		24
SNNPR	29	29		0
BG	15	0		15
Afar	14	14		0
Addis Ababa	14	14		0
Dire Dawa	9	0		9
Total	143	86		57

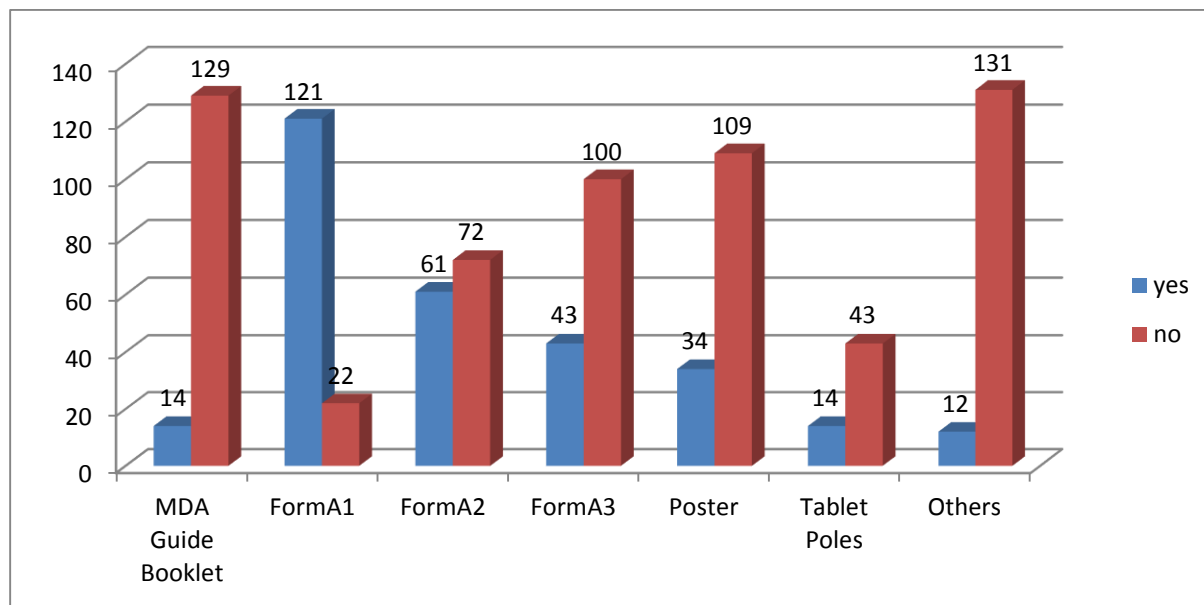
54 out of the 139 (38.4%) total teachers interviewed on Deworming day reported that they were involved in the most recent training and 76.1% of the teachers who received the training stated that the training successfully prepares them for their role in the deworming campaign (23.9% said it did not prepare them enough). The school headmasters indicated that the main reason for low teacher attendance was that the woreda offices mostly in Amhara, Oromia and SNNPR failed to invite them, only extending the invitation to school headmasters. Woredas with the lower participation of teachers included Aroresa, Arsi Negele, Kercha, Mareko, Becho, Geze Gofa, Guangua, Sinan and also Addis Ababa. However, in Benishangul and Dire Dawa, teachers from every deworming school were trained. 129 out of 143 schools (90.2%) when asked said that they had cascaded the knowledge gained from the woreda-level training to their respective staff prior to deworming day.

Out of the total 143 Health Extension Workers (HEWs) interviewed, 125 of them (87.4%) were trained at least two weeks prior to this round of deworming administration. 105 out of 125 (84%) HEWs reported that the training prepared them for deworming activities.

The level of materials and reporting forms present in schools on deworming day and as shown to the independent monitors by the headmasters were seen to vary in number. Only 14 out of the 143 schools (10%) had at least one copy of the Deworming Guide for Teachers and HEWs (MDA Guide Booklet) as a reference for implementation on Deworming day. 34 out of 143 schools (24%) had at least one STH/SCH poster hung at the school for mobilization purposes. 14 out of the 57 schools (24.5%) treating for schistosomiasis had a standard dose pole available prior to the MDA (see Figure 1). However, during the actual deworming administration 53 out of 57 schools treating for SCH had the standard dose pole at their

deworming stations (see Figure 2). The remaining four schools did not have PZQ to treat and therefore did not have the dose pole either. Only 48 out of the 143 schools (33.5%) had handwashing facilities available. 121 schools out of 143 (84.6%) had a copy of Form A1 to show to the independent monitors before deworming started. However, 124 (86.7%) schools had the form to use at their deworming stations once deworming started. All schools observed had adequate amounts of MEB and PZQ albeit the 4 schools scheduled to treat SCH without PZQ on Deworming day (see Figure 2).

Figure 1. Materials and forms shown to independent monitors by primary school headmasters prior to deworming activity commencement, November 2015



Prior to deworming day, 119 schools out of the total 143 (83.2%) interviewed, conducted some level of community and/ or school mobilization activities. The majority of schools that conducted mobilization reported that they carried out the following activities:

- 79 out of 119 schools encouraged children to share deworming day information with their parents
- 52 out of 119 encouraged children to share deworming day information with siblings and friends
- 46 out of 119 conducted health education in the class
- 46 out of 119 displayed posters in the school (however, only 34 schools monitored had posters posted on Deworming day as noted above)

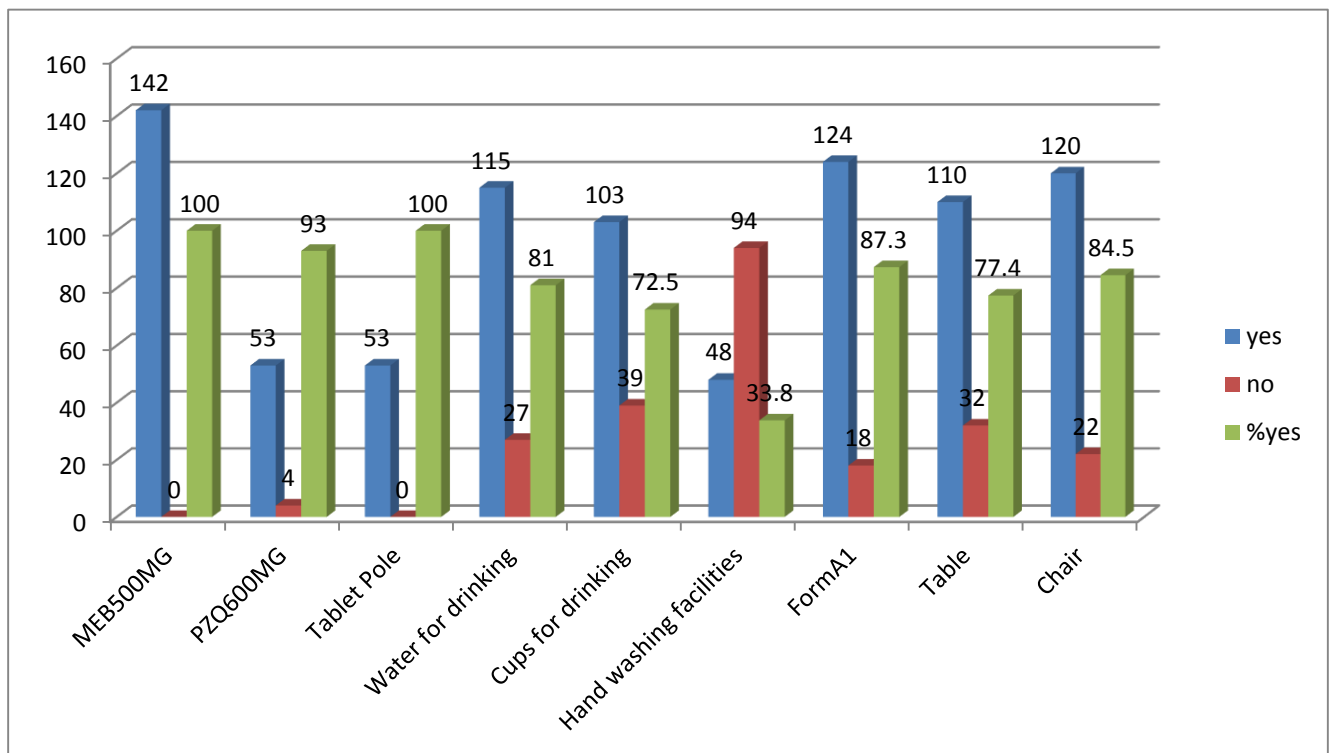
Concerning the methods of reported mobilization of non-enrolled children:

- 62 out of 143 (43.3%) HEWs used the health development army by moving house to house

Planning for implementation of deworming day:

- 46 out of 143 (32.2%) schools planned to conduct deworming in the classroom
- 87 out of 143 (60.8%) schools planned to conduct deworming outside the classroom
- 101 out of 143 (70.6%) schools planned to treat non-enrolled
 - 40 out of 143 (28%) schools planned to treat non-enrolled children together with enrolled children at the same time
 - 29 out of 143 (20.3%) schools planned to treat non-enrolled children separately from the enrolled children but at the same time
 - 32 out of 143 (22.4%) schools planned to treat non-enrolled separately from the enrolled children and at a different time
- 55 out of 143 headmasters (38.5%) stated that low awareness of the campaign was the reason why non-enrolled in their area may not come to school for treatment within the scheduled deworming days
- 50 out of 57 (87.7%) schools treating for SCH requested that the children eat a good breakfast on the day of deworming

Figure 2. Materials, forms and drugs present at deworming stations during the MDA, November 2015



b. Deworming protocols

At the time of direct observation, 54 out of 143 (37.8%) schools' deworming team consisted of one trained HEW and two trained teachers. The majority of the deworming teams were seen to be comprised of one trained headmaster and one trained HEW. In 131 out of 143 (91.6%) schools, drugs were administered to the students by a HEW.

The majority of the enrolled school-aged children (SAC) were called by class (62.2%) but not necessarily starting with the lower class first. Only 22 schools of the 89 administered drugs by class started with the lower classes first.

In each school, monitors observed the first 50 enrolled children dewormed and noted their gender, whether they had taken or spit out treatment for STH and SCH and if the HEW had observed the child swallowing the tablets. A total of 6,790 students were observed (see Table 6).

Table 6. First fifty enrolled SAC treated per region that spit out deworming tablets and total observed swallowing tablets by deworming team during the MDA in schools, November 2015

REGION	a. Gender		b. Mebendazole		c. HEW Observed		d. *Praziquantel		e. *HEW Observed	
	M	F	TAKEN	SPIT OUT	YES	NO	TAKEN	SPIT OUT	YES	NO
Oromia	640	582	1172	50	990	232	343	11	337	15
Amhara	887	820	1683	22	1544	161	1117	48	1145	18
SNNPR	735	691	1402	24	1272	154	-	-	-	-
BG	311	307	618	0	603	15	587	40	602	25
Afar	364	311	668	7	665	10	-	-	-	-
Addis Ababa	356	344	645	55	550	150	-	-	-	-
Dire Dawa	262	180	442	0	411	31	435	15	419	31
TOTAL	3555	3235	6630	158	6035	753	2482	114	2503	89

Out of the total of 6,790 (male=52.4%) students treated with MEB and observed, 158 spit out the medication (2.4%) and 753 children were not observed by the HEW or deworming team (11.1%). The regions with the highest percentages of children spitting out MEB were Addis Ababa and Oromia at 8.5% and 4.3% respectively. 27.3% of the first fifty children treated for STH in Addis Ababa and 23.7% in Oromia

were not observed by the HEWs or deworming teams. The tablets were disbursed but the actual swallowing of them was not verified.

Out of the total 2,596 students targeted for treatment of SCH and observed, 114 students spit out the PZQ (4.4%) and 89 students taking treatment were not observed by the HEW or deworming team (3.4%).

It was noted by the monitors that in some situations it was very difficult to collect the data from the first fifty enrolled children dewormed because of the way the drugs were administered. Not all schools called the children up to a deworming station and distributed the tablets one by one observing that the child had swallowed the tablets by physically checking the child's mouth. Moreover, the monitoring tool was not constructed to catch overall deviation from the general implementation guidelines. This will be corrected in the questionnaire for the following April 2016 MDA round.

In general, 73.7% of schools observed provided health education messages to the students prior to treatment. In 62.2% of schools, health education messages were delivered to the students by the HEW, followed by school headmasters and teachers equally in around 28% of the schools observed.

36 of the total 143 (25%) schools monitored, actually treated non-enrolled children on the day of observation. 18 out of the 36 schools dewormed non-enrolled together with the enrolled children at the same time, however, only one school prioritized the treatment of the non-enrolled over the enrolled. More than half of the schools observed in Benishangul (7 out of the 13 or 63.8%) treated non-enrolled during the monitoring activities. In Addis Ababa, none of the schools observed treated for non-enrolled. Dire Dawa city administration treated non-enrolled in 1 of the 8 total schools observed.

81 (58.7%) of schools observed, asked children if they were sick or on medication prior to commencing deworming administration. Of those 81 schools, 44 schools did not treat the children who claimed they were ill or on medication on deworming day and only 18 of the 81 schools recorded the children's names for treatment later.

70% of the schools observed recorded absences for treatment to be given at a later date. 131 out of the total 142 (92.3%) schools used Form A1 to record treatments on observation day and had the names of the students from the class register transferred to Form A1 prior to administering treatments.

Almost all children taking treatment for STH had received one tablet and were asked to chewed it. Of the schools providing treatment for SCH, 3 out of 53 schools observed provided praziquantel before Mebendazole. In 47 (77.0%) of the schools, praziquantel tablets were broken into halves or quarters for

children unable to swallow them. 120 out of 143 schools (83.9%) provided drinking water to aid the children in swallowing the tablets.

Out of the 53 total schools targeted for treating SCH and observed, 34 schools correctly used the dose pole (64%). Amhara and Oromia Region seemed to face the greatest challenge with the dose pole with 12 out of 23 (52.2%) and 5 out of 8 (62.5%) schools observed (respectively) implementing it incorrectly. The challenges observed included: hanging the dose pole incorrectly against the wall, issues with ruler placement on top of the child's head and at times not using the dose pole at all even though it was present.

While conducting monitoring activities in 143 schools over a course of 5 days, supportive supervision was seen to be conducted in 61 schools (42.6%) with all of the supervisors coming from the woreda-level. The larger regions (Oromia, Amhara and SNNPR) along with Addis Ababa showed higher percentages of supportive supervision ranging from 42.9% to 57.7%.

c. Side effects and SAE management

Due to missing data, side effects and SAE management can only be reported in 138 schools. In 31 out of 138 (22.5%) schools, students manifested drug side effects after treatment of SCH and/ or STH. The highest number of drug side effects was observed in Dire Dawa followed by Addis Ababa, 5 out of 9 (55.5%) schools and 6 out of 13 (46.1%) schools respectively. The most commonly observed drug side effects in all the schools observed were abdominal pain in 13 (41.9%) schools, nausea in 9 (29.0%) schools and vomiting in 5 (16.1%) schools. 9 schools out of 31 (29.0%) observed recorded side effects in Form A1. Severe Adverse Events were observed and recorded by monitors in 14 out of the 31 (45.2%) schools with four schools (three from Dire Dawa and 1 from Oromia) referring their SAEs to local health facilities. According to the independent monitors' observation, 41.9% of deworming team was capable of managing side effects and treated properly (see Table 7).

Table 7. STH/SCH MDA side effects observed and management of observed side effects, November 2015

Variable categories	National (%)	A. Ababa (%)	Afar (%)	Amhara (%)	B. Gumuz (%)	D. Dawa (%)	Oromia (%)	SNNPR (%)
Amount of time children were observed for possible side effects following deworming as reported by headmaster								
30 minutes	44 (30.8)	2	0	10	1	5	13	13
One hour	22 (15.4)	2	2	11	2	0	3	2
2 hours	50 (35.0)	6 (42.9)	10 (71.4)	11 (31.4)	11 (73.3)	0 (0.0)	7 (25.9)	5 (17.2)
Other	12 (8.4)	1	0	2	1	1	2	5
Did not know	15 (10.5)	3	2	1	0	3	2	4
Person responsible for managing side effects on Deworming day as reported by headmaster								
HEW	117 (81.8)	14 (100)	9 (64.3)	31 (88.6)	11 (73.3)	6 (66.7)	25 (92.6)	21 (72.4)
Teacher	7 (4.9)	0	1	2	3	1	0	0
Others*	10 (7.0)	0	2	2	0	1	1	4
Refer or by nurse	9(6.3)	0	2	0	1	1	1	4
Total number of schools with children showing side effects following treatment as observed by independent monitor								
Yes	31 (22.5)	6 (46.2)	1 (7.1)	9 (26.5)	6 (46.2)	5 (55.6)	4 (15.4)	0 (0.00)
No	107 (77.5)	7 (53.8)	13 (92.9)	25 (73.5)	7 (53.8)	4 (44.4)	22 (84.6)	29 (100)
Total number of schools with side effects that recorded all side effects on Form A1 as observed by independent monitor								
Yes	9 (29.0)	4 (66.7)	1 (100)	0 (0.00)	1 (16.7)	3 (60.0)	0 (0.00)	0
No	22 (70.6)	2 (33.3)	0 (0.00)	9 (100)	5 (83.3)	2 (40.0)	4 (100)	0
Total number of schools with side effects including SAEs as observed by independent monitor								
Yes	14 (45.2)	4 (66.7)	1 (100)	2 (22.2)	4 (66.7)	3 (60.0)	0 (0.00)	0
No	17 (54.8)	2 (33.3)	0 (0.00)	7 (77.8)	2 (33.3)	2 (40.0)	4 (100)	0
Total number of schools with side effects were a child was referred to local health facility due to SAEs as observed by monitor								
Yes	4 (12.9)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	3 (60.0)	1 (25.0)	0
No	27 (88.6)	6 (100)	2 (100)	11 (100)	6 (100)	2 (40.0)	3 (75.5)	0
Total schools with side effects whose deworming team were trained and capable to manage side effects as observed by monitor								
Yes	13 (41.9)	3 (50.0)	1 (100)	6 (66.7)	1 (16.7)	1 (20.0)	1 (25.0)	
No	18 (58.1)	3 (50.0)	0 (0.00)	3 (33.3)	5 (83.3)	4 (80.0)	3 (75.0)	

VI. Quality of Community Sensitization & People's Perceptions

a. Quality of community sensitization prior to the campaign

The woreda community mobilization and sensitization survey was conducted after the monitors successfully completed the training or deworming observation and interviews. Three locations at the

woreda center (woreda government offices, the market/ gathering centers and outside the church or mosque) were visited for this survey. In each location, one individual was to be randomly selected for an interview. A total of fifteen (15) woredas were observed for this purpose in five regions and two city administrations of Ethiopia.

The results of the survey showed that most of the woredas did not display any FMOH SCH/STH school-based deworming programme material. In the 15 woredas observed, only 3 posters and 1 banner were displayed at or near woreda government offices. There were no NTD posters or banners displayed around the woreda market/ shop center.

A total of 14 respondents were interviewed around the woreda government offices. The mean age of the respondents interviewed was 32 years (with standard deviation of ± 8.50) and nine were males and five were females. Most of the interviewed participants around government offices were government employees followed by housewives and students. Almost half (52.4%) of the respondents interviewed around the woreda government office heard about SCH/STH deworming campaign conducted in their community, however only a few knew that deworming was happening in schools and one person reported that deworming was happening at the woreda health office. Three reported that they heard the about the deworming campaign through the town crier, two from a mobilization van, and one from TV. None of the respondents stated that they received information from a poster, banner, radio or the Health Development Army which typically mobilizes house-to-house. Only 3 of the 14 respondents knew that children were being treated for intestinal worms during the deworming campaign. 5 of the 14 respondents interviewed had children between the ages of 5 and 14 years attending primary school (9 children). Almost half of the respondents who had children between the ages of 5 and 14 years planned to send all of their children to the nearest school for treatment, whereas the rest planned to send some of their children age 5 to 14 years old to the nearest school for treatment.

The majority of the interviewed participants around woreda government offices had regular access to television (78.6%), cell phone (78.6%) and radio (57.1%). When asked how they receive their general health messages: 8 of the 14 respondents interviewed said that they receive health messages through the local health center; 5 of the 14 relied on the HDA and only 2 of the 14 stated that they received health messages through their community leaders.

Interviews were not conducted in the market center or near a church or mosque at the woreda-level.

Community mobilization and sensitization programme activities and efforts were also measured using the same method in 146 kebeles (villages). Only 6 kebeles displayed deworming programme materials at the kebele offices. From these, 2 were in Afar, 3 in Amhara and 1 Oromia kebele office. Other NTD (Oncho, LF, and Trachoma) posters or banners were displayed in seven (5.1%) kebele offices. Again, in almost all the 146 kebeles observed, no deworming programme materials were found in or near the market/ shop center.

A total of 441 community members were interviewed from the same 146 kebeles. Interviews were conducted around government offices, church/mosque and markets. 68% (303) of them were male and majority of them were farmers. 43.1% (190) had heard of the current deworming campaign and only half of those that heard of the campaign (81) could source where they received their information from, including:

- 37 house-to-house mobilization
- 26 loud speaker
- 10 poster
- 1 banner
- 6 radio
- 1 TV

54.2% (103 out of 190) of the community members interviewed that had heard of the current deworming campaign, stated that the types of worms that children were being treated for were intestinal worms.

When asked if they had children between the ages of 5 and 14, 69.8% answered yes (132 out of 190) of which 110 out of 132 (83.3%) stated that they will be sending all of their children within the target age group for deworming. Nine community members said that they would send some of their children for deworming and thirteen community members refused to send their children to school for deworming. The reasons for their refusals were said to be due to complaints about side effects and their overall disagreement in treating those that were thought to not be infected with intestinal worms.

Of the total 441 community members interviewed, 54.2% claim regular access to radio, 49.2% have regular access to a cell phone and 22% have regular access to TV. 28.3% did not have access to any of the three.

b. People's knowledge and perceptions of deworming (key interviews)

Headmaster, teacher and HEW interviews (deworming teams)

The following captures the deworming teams' level of knowledge on deworming day in regards to drugs, dosage, expected side effects and target population for STH and SCH:

- 92 out of 143 headmasters (64.3%) and 126 out of 143 HEWs (88.1%) correctly answered that mebendazole will be used for the treatment of STH (11 HEWs stated albendazole)
- 94 out of 143 headmasters (65.7%) and 137 out of 143 HEWs (95.8%) correctly answered that the dosage for the treatment of STH is one tablet per child
- 87 out of 143 headmasters (60.8%) could list at least two possible mild side effects of STH treatment
- 131 out of 143 headmasters (91.6%) correctly answered that the age group treated/ to be treated for STH is 5-14 years
- 29 out of 57 headmasters (50.9%) and 44 out of 60 HEWs (73.3%) correctly answered that praziquantel will be used for the treatment of SCH
- 37 out of 57 headmasters (64.9%) and 45 out of 60 HEWs (75%) correctly answered that the dosage for the treatment of SCH is according to the tablet/ dose pole
- 45 out of 57 headmasters (78.9%) could list at least two possible mild side effects of SCH treatment
- 31 out of 57 headmasters (54.4%) answered that children should eat prior to PZQ treatment to minimize side effects
- 47 out of 55 headmasters (85.5%) and 53 out of 57 HEWs (93%) correctly answered that the age group treated/ to be treated for SCH is 5 – 14 years

Additionally, 40 out of 143 HEWs (28%) were knowledgeable on the transmission of STH and 45 out of 143 HEWs (31.2%) could explain ways in which STH could be prevented. Among HEWs who provided SHISTO treatment, 55.8% reported that children can get SCHISTO through contact with infected water sources. Teachers and headmasters were not questioned on STH and SCH transmission and prevention during this round of monitoring, however, this has been corrected in the April 2016 IM tools.

As mentioned previously, the majority of the deworming teams were seen to be comprised of one headmaster and one HEW. There were very few deworming teams that had an additional teacher (in addition to the headmaster) implementing deworming on deworming day. Therefore, this group was

eliminated from the data analysis above when measuring the level of knowledge within the deworming team.

The 143 headmasters participated in an additional short interview following deworming activities at the schools. 118 out of 143 (82.5%) headmasters answered that that day's deworming exercise was successful. Regarding the availability of drugs, 8 (6.0%) of headmasters reported that they have faced drug shortages of both MEB and PZQ in four schools and MEB only in about four additional schools. When asked what they will do about the tablet shortage, the majority of the headmasters said that they would call the local health facility to reconcile the situation. 110 (82.1%) of the school headmasters claimed that they had extra tablets left over of which 68 answered that the HEW would return the remaining drugs to the local health facility and 33 said that they would be keeping the drugs at the school for the next day's deworming activities.

The greatest number of headmasters (29.5%) answered that deworming has been or can be completed in 3 days in their respective school. However, the range of days it takes to complete deworming in schools still runs between 1 to 4 days (see Table 8 below). 72.9% of headmasters believe that it would be beneficial to reduce the number of deworming days by increasing the number of deworming teams per school and 72.4% thought that the community would allow teachers to administer deworming tablets to students.

Table 8. Headmaster post deworming interview, November 2015

Interview question	n (%)
Days take to complete deworming activities	
One	23 (17.4)
Two	26 (19.7)
Three	39 (29.5)
Four	28 (20.9)
Five	15 (11.2)
Ten	1 (0.8)
Beneficial to reduce the number of deworming days by increasing the number of deworming teams per school	
Yes	97 (72.9)
No	36 (27.1)
Would the community allow teachers to administer deworming tablets to students	
Yes	97 (72.4)
No	37 (27.6)

The majority of the (69.9%) of the headmasters answered that the benefit to deworming is to kill worms, followed by to prevent infection. Around 20% of the headmasters interviewed claim that they deworm themselves for STH and/or SCHISTO. When asked if they had any programme recommendations, 74.3% stated that it would be helpful to increase the time given for training and that the programme should be continued.

Parents

136 randomly selected parents in 5 regions and 2 city administrations of Ethiopia were interviewed at the school compound regarding their experiences with the deworming campaign.

When asked what the children were being treated for during the deworming campaign in the school compound, 41 out of 136 (30.1%) parents reported worms and 30 out of 136 (22.1%) did not know with the remaining 65 (47.8%) parents providing other reasons for the treatment besides worms (STH and/ or SCH).

When asked how they heard about the deworming treatment in schools, 23 of the 136 parents (16.9%) answered their children; 21 out of 136 (15.4%) claimed their local HEW, 10 of the 136 (7.4%) parents reported a meeting held at the school; and another 10 out of 136 (7.4%) stated that they received the message through the Health Development Army. Only 77 out of 136 (56.7%) parents could answer this question. This might be due to poor community mobilization and sensitization prior to the campaign. The remaining 43.3% learned of the deworming activities on the day of deworming.

75 out of 136 parents (55.15 %) answered that the benefit to deworming is to kill worms, followed by to reduce infections and 9 out of 136 parents claimed that they did not know. 77 out of 136 parents (56.6%) answered that worms are transmitted through poor sanitation, followed by eating raw foods. Nine parents could not answer this question and claimed that they didn't know how worms are transmitted. When asked how worm infection can be prevented, 60 out of 136 (44.11%) parents reported keeping personal hygiene, 50 out of 136 (36.76%) stated by taking drugs and 7 out of 136 claimed that they didn't know. When asked whether or not they treated themselves for worms, only 54 out of 136 (39.7%) parents responded to this question. The majority of parents (45 out of 54 or 83.3%) stated that they did not deworm themselves with only 9 out of 54 parents claiming that they do deworm themselves for STH and/or SCHISTO. 52 out of 136 (38.2%) parents interviewed claimed that they practice hand washing at home.

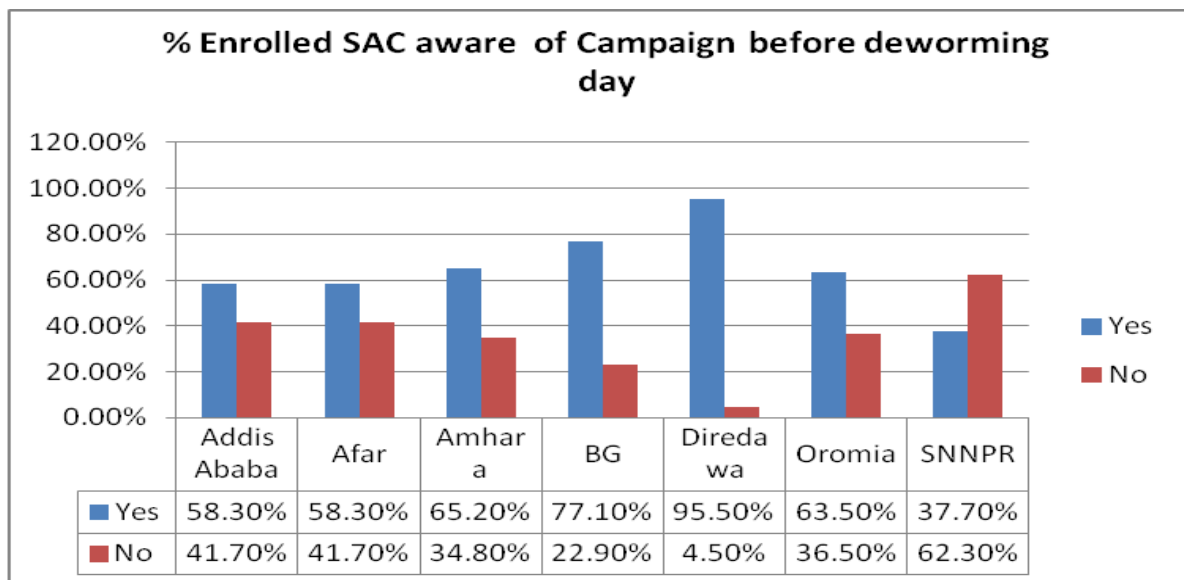
Enrolled students

Total of 287 enrolled children were interviewed about their knowledge and perception of deworming on Deworming day. 176 of these students were targeted for treatment of STH only and 111 were targeted to be treated for STH and SCH during this deworming campaign. The average age of the enrolled child interviewed was 11.5 years with a standard deviation of 2.23.

All of the enrolled children interviewed stated that they had taken a tablet or tablets today. 163 stated that they had only taken one type of tablet. 132 (46%) reported to have eaten prior to deworming and that they had eaten at home.

61.7% (177) of the children interviewed said that they were aware of the campaign at school before the day of deworming and 38.3% of them stated that they were not aware that deworming was occurring on this day. Of the children aware of deworming day, the majority (119, 67.2%) answered that it was their class teacher that provided them with the information. Furthermore, out of the 177 made aware by mostly their teacher, 135 (76.3%) of them then went home and told their parents about the upcoming deworming campaign. In Dire Dawa, almost all children received prior information about the deworming campaign, whereas in SNNPR the interviews showed that the level of student awareness of the campaign prior to deworming day was the lowest (see Figure 3 below).

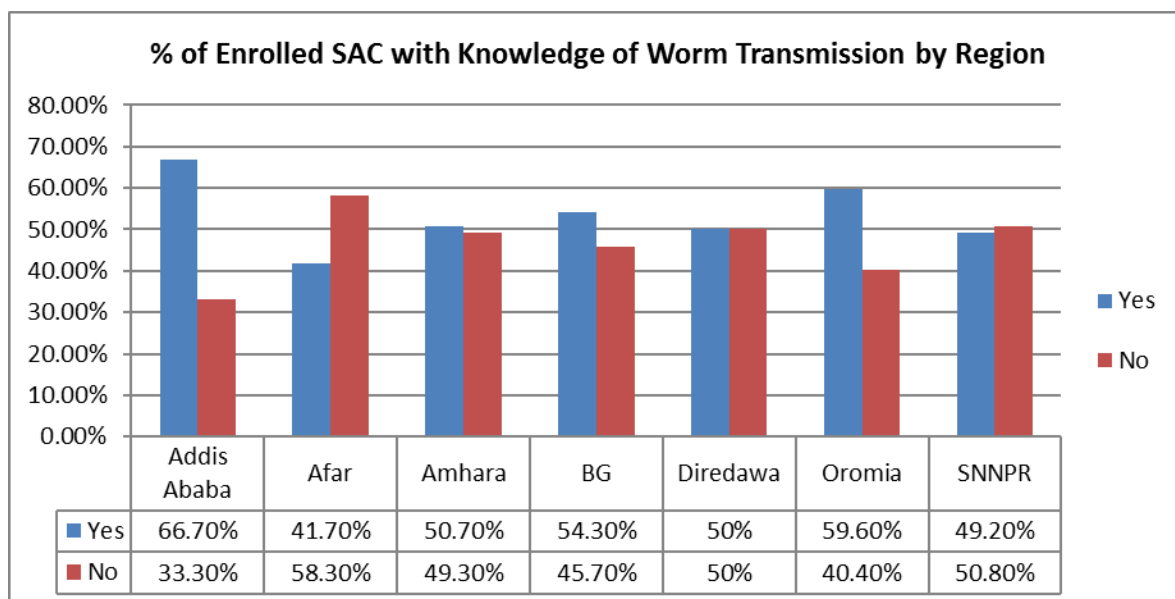
Figure 3. Percent enrolled SAC aware of the deworming campaign prior to deworming day by region, November 2015



177 (61.7%) students, when asked, stated that they had siblings between the ages of 5 and 14 years of age and 118 of the 177 (66.6%) students with siblings in the treatment target range said that their siblings were also treated.

152 (53%) students interviewed stated that they were knowledgeable on how people become infected with worms providing various answers including: infection occurs when eating and drinking contaminated food and water; eating food without washing hands or not washing hands after using the toilet; due to overall lack of handwashing, lack of personal hygiene, not using latrine; open practicing defecation and walking barefoot. 162 (56.4%) students interviewed knew how to prevent worms stating a variety of answers again including: that one can prevent infection by washing hands and using toilet; washing hands before meal and after using the toilet; drinking chlorinated water; keeping personal hygiene; wearing shoes and avoid walking barefoot. Enrolled students were most knowledgeable in Addis Ababa and in Oromia and the least knowledgeable in Afar (see Figure 4 below).

Figure 4. Percent enrolled SAC with knowledge of STH transmission by region, November 2015



Non-enrolled students

Total of 143 non-enrolled children were planned to be selected for interviews, however, due to low non-enrolled SAC present at the schools during the days of observation, only 28 were interviewed. The majority of non-enrolled children seen present at the schools for deworming was in Afar and zero non-enrolled children were seen during the school observations in Addis Ababa. The mean age of the respondents was 9 years \pm 3 years.

27 of the 28 confirmed that they had taken a tablet or tablets on the day of the interview with one child not receiving deworming. 17 of the 27 claimed that they had swallowed only 1 type of tablet while 6 out of 27 stated that they received 2 types of tablets. 5 of the 27 children claimed that they had swallowed three different types of tablets or another combination.

13 out of the 28 children (46.4%) stated that they were aware of the campaign prior to deworming day. 7 of the 13 received the message from a friend and 5 out of 13 received the message from a parent. None of the children interviewed mentioned that they had received their messages through posters or banners.

15 out of the 28 children interviewed, when asked, stated that they have siblings between 5 and 14 years of age, however only 3 out of the 15 non-enrolled children with siblings confirmed that their siblings were also treated.

Health education regarding worms within this population is much lower than the enrolled SAC interviewed. 6 out of the 28 non-enrolled interviewed claimed that they did know how worms are transmitted and stated that infection occurs when one defecates outside of a toilet; drinks dirty water; fails to wash hands; eats spoiled food; lacks personal hygiene; and sits in a dirty place. 5 out of the 28 children said that they were knowledgeable in regards to the prevention of worms but could not provide examples.

VII. WASH Indicators

School WASH indicators were collected by the monitors from the 143 schools observed on deworming day. As previously mentioned, 64 of the 143 schools (44.7%) had at least one hand washing facility on the school grounds. Of the 64 schools with a hand washing facility present, only 24 had water on the ground as a sign of usage. According to this information, 24 out of the 143 schools observed (16.8%) had and used a hand washing station of which 14 schools had soap or ash next to or near the hand washing station.

114 out of 143 schools (79.7%) had toilet structures separate for boys and girls. Among the schools having toilet structures, 75 out of 114 (65.8%) were pit latrines and 36 (31.6%) were improved pit latrines. 13 out of the 143 schools (9.1%) had open toilets (designated space, but no structure) and 4 of the schools (28%) had no toilet facility. All of the toilets were being used at the time of observation no matter the level of functionality. 38 out of the 114 toilet structures (33.3%) could be rated as clean and functional based on FMOH set standards with 75 of the structures (65.8%) somewhat functional.

VIII. Conclusion

The independent monitoring pilot of the November 2015 school-based deworming campaign confirmed that the majority of woredas conducted training of teachers and health extension workers. However, the quality of the training can be improved in terms of standardizing training agendas and materials appropriate for each level of the training cascade (including pre- and post-tests), ensuring that all of the training materials are available to the trainees and facilitating deworming day role plays prior to the actual drug administration in schools. In addition, some attention needs to be paid to the number of trainers available at each level of the training cascade to minimize potential setbacks in the training and deworming timelines. Coupled with this of course is ensuring that the budgets, drugs and materials are sent to the regions, zones and woredas ahead of time to ease their facilitation of the training cascade and drug administration.

The FMOH has scaled up deworming activities in schools significantly during the first year of the programme. Deworming is occurring in the targeted schools and on average over half of the students and parents are sensitized and aware of the deworming campaign before drug administration. Even though community mobilization still needs significant attention, the simple passing of messages through students to their parents has proven to be effective to reach the current level of awareness. However, the school-based deworming programme would greatly benefit from basic health & hygiene education in schools and communities along with stronger community mobilization initiatives utilizing the local health facility, HEW, HDA, community leaders, and religious leaders in more traditional ways in rural areas with greater focus on TV and radio spots in the cities. With effective community mobilization, increased community acceptance, demand for deworming, coverage of non-enrolled SAC and compliance would follow.

Due to some limitations with the piloted independent monitoring tools, it was difficult to showcase how many of the schools' deworming teams followed the majority of the steps to drug administration correctly (i.e. deworming children one-by-one, checking their mouth to ensure that they have swallowed the tablets and then recording treatments). Nevertheless, it was noted by the independent monitors that capturing data from the first fifty enrolled students dewormed on deworming day was challenging (Table 6) because of how the deworming activities were being implemented. It was difficult to observe and note in some schools how many children spit out the MEB and/ or PZQ and if the HEW had observed the child spitting out or swallowing the tablets. This experience alone exemplifies the need to focus more on the steps of drug administration as advised by the World Health Organization and the FMOH during the upcoming campaigns. The report does clearly highlight that only 58.7% of schools observed asked children if they

were sick or on medication prior to commencing deworming administration and half of the schools that screened still treated those who claimed to be ill or on medication. An emphasis on the importance of the initial screening process prior to administering deworming tablets followed by observation and treatment of side effects in a correct manner (if and when they occur) would also greatly benefit the programme.