

Deworm the World Initiative - Pakistan

A comprehensive report from the first round, second year of School-Based Deworming implementation in Islamabad Capital Territory (ICT), Pakistan

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Glossary

AEO	Area Education Officer
BECS	Basic Education Community Schools
NCHD	National Commission for Human Development
FDE	Federal Directorate of Education
ICT	Islamabad Capital Territory
IHN	Indus Health Network
IRD	Interactive Research & Development
MDA	Mass Drug Administration
SBDP	School-Based Deworming Program
STH	Soil-Transmitted Helminths

1.0 Executive Summary

During January 2020, Islamabad Capital Territory (ICT) carried out its second annual round of school-based deworming targeting both enrolled and non-enrolled children, ages 5-14 years (classes 1 - 10). Mass drug administration (MDA) took place in 6 educational sectors endemic for soil-transmitted helminths (STH), targeting approximately 540,000 enrolled and non-enrolled school-age children (SAC) within 706 public schools, 618 private schools, and 73 religious schools. Non-enrolled children across all targeted education sectors were mobilized to access free deworming treatment at a nearby school on Deworming Day.

Evidence Action monitors the key implementation processes before, during, and after each MDA to assess the effectiveness of training and supply chain, adherence to protocols, and treatment coverage to inform program design and improvement. Evidence Action recruited an independent monitoring firm, Ipsos, to collect data from a sample of 41 teacher trainings, 67 schools on Deworming Day, 184 parents of enrolled children targeted by the MDA, and 17 parents of non-enrolled children. In addition, 201 enrolled children were interviewed on Deworming Day at the sample schools, as well as 67 head teachers and 67 teachers who were trained during the teacher training to conduct deworming in their respective schools. Following Deworming Day, 3,307 children were interviewed from 60 sampled communities and the nearest schools in two educational sectors for coverage validation.

On average, 63% of expected schools had a representative in attendance at the teacher training events. All the seven training topics were covered in at least 90% of the training monitored with topics on the target population, and recording and reporting forms being covered in all (100%) trainings. Drug administration was not covered in 10% of training sessions. However, the thoroughness of information passed within the training topics varied which had a direct influence on the level of knowledge of the teachers as collected in the pre and post-tests. Read more on training starting on [page 8](#).

Directly following teacher training, all the 41 monitored teacher trainings distributed drugs to teachers to take to their respective schools for Deworming Day. As for materials, 95% of trainings distributed teacher training booklets, 88% distributed both reporting forms and banners. Direct observation at schools on Deworming Day and follow-up interviews with the head teachers after the process of drug administration at the schools revealed that all schools (100%) had sufficient drugs to deworm all children present, 88% had Form 1A, 61% had banners to display, and 58% had teacher training booklets. Read more on drug and material distribution on [page 9 and 20](#).

Overall awareness of Deworming Day among parents was 92%, however, higher among parents of enrolled children (93%) as compared to the parents of non-enrolled children (82%). 73% of parents indicated that they would be sending their children for deworming (75% for the parents of enrolled children and 43% for the non-enrolled). Of the parents that said they would not send their children for deworming, the majority (43% for both enrolled and non-enrolled) indicated that they would not be

sending their children for deworming because they were feeling unwell, with the second major reason (25% and 20%, respectively) being that the child did not attend school on the Deworming Day. Children (61%) and teachers (41%) were the primary sources of Deworming Day information cited by the parents. Read more on community sensitization on [page 16](#).

School observations on Deworming Day revealed that 100% of randomly sampled schools were distributing tablets on Deworming Day. Of the schools that were conducting deworming, observational monitoring revealed that the correct dosage of mebendazole was administered at 94% of schools, and 99% of schools utilized the treatment forms (Form 1A, Form 1B). Further, interviews conducted with teachers prior to drug administration revealed that only one teacher was not aware of the drug to be administered, and 3% of teachers had not made prior transfers of names from the class register to Form 1A, a gap which could have increased their Deworming Day workload. To this end, teachers that attend the training should be encouraged to share the information they acquire. Read more on drug administration on [page 18](#).

Coverage validation surveys were conducted within 6 weeks of MDA treatment within two randomly selected educational sectors (Islamabad Metropolitan Corp and Tarlai Kalan Qh) to estimate the program reach and surveyed coverage in comparison to results reported by schools. From coverage evaluation surveys, the overall proportion of targeted children interviewed that were offered the drug (program reach) was 88% in Islamabad Metropolitan Corp and 83% in Tarlai Kalan Qh, while the proportion of targeted children that swallowed the drug (surveyed coverage) was 69% in Islamabad Metropolitan Corp and 68% in Tarlai Kalan Qh. Adjusting for the fact that the program targeted only a 94%¹ of the overall at-risk SAC population in ICT, the 67% and 66% surveyed coverage rates of targeted SAC therefore indicate that 65% and 64% of the total at-risk SAC population swallowed the drug in Islamabad Metropolitan Corp and Tarlai Kalan Qh, respectively. Read more on coverage validation on [page 21](#).

Table 1: Key Performance Indicators

	Public Schools	Private Schools
Target schools represented at teacher training ²	63%	
Target schools with adequate drugs during deworming	100%	100%
Target school utilizing at least one awareness activity or material	96%	100%
Community members who report seeing or hearing about deworming through IEC deworming materials or word of mouth this round	99%	90%
Target schools distributing tablets on Deworming Day	100%	100%
Enrolled children present in school on Deworming Day	83%	88%
	Islamabad Metro Corp	Tarlai Kalan Qh

¹ Overall, 94% of of at-risk SAC in ICT were targeted (537,287 out of 573,880)

² Disaggregation by school type for training sessions was not available for this round.

Targeted children who report receiving unprogrammed deworming in the last six months	3%	4%
Target population validated as swallowing deworming tablets on Deworming Day based on Coverage Validation ³	69%	68%

Overall, implementation of this round of school-based deworming in ICT was successful, highlighted by crucial successes in training such as the majority of participants on time for sessions (80%), high coverage of topics in 90% of trainings, high (92%) awareness of the MDA, and all (100%) sampled schools found deworming during the MDA. However, there were also key struggles that should be reviewed and addressed ahead of the next round of MDA, including the low proportion of parents willing to send their children for deworming, administration of deworming tablet to more than one child in some instances, less than 75% of the therapeutic population confirmed swallowing the drug in the two coverage validation districts of Islamabad Metropolitan Corp and Tarlai Kalan Qh. The full summary of successes, struggles, and recommendations can be found on **page 22**.

2.0 Background

Parasitic worm infections, such as soil-transmitted helminthiasis (STH), interfere with children’s nutrient uptake, causing anemia, malnourishment, and impaired mental and physical development⁴. These conditions pose a serious threat to a child’s health, education, and economic potential. Infected children are often too sick or tired to concentrate in school, or to attend school at all. The World Health Organization (WHO) estimates that over 1.5 billion people are infected globally with STH, with over 860 million children worldwide in need of treatment⁵. A national STH prevalence survey conducted in 2016 found that over 16 million school-age children (5-14 years) in Pakistan are at risk of STH and require regular treatment, with an estimated 573,880 at-risk school-age children reported in Islamabad Capital Territory (ICT).

Following a series of consultative meetings, a technical assistance partnership of Interactive Research & Development (IRD), Indus Health Network (IHN), and Evidence Action was established with the aim of providing comprehensive technical assistance to the ICT administration and federal government to plan, implement and monitor a school-based deworming program.

The goal of school-based deworming is to eliminate worms as a public health problem, and therefore, control the morbidity of STH within school-age children (SAC) living in identified at-risk areas

³ In ICT Round 1 of 2020, CV was only conducted in two implementation units: Islamabad Metropolitan Corp and Tarlai Kalan Qh.

⁴ <https://www.who.int/news-room/fact-sheets/detail/soil-transmitted-helminth-infections>

⁵ http://apps.who.int/neglected_diseases/ntddata/sth/sth.html

necessitating treatment. The second annual mass drug administration (MDA) campaign of ICT’s school-based deworming program was conducted in January 2020, targeting 6 at-risk education sectors and a total of 537,287 children enrolled in 706 public schools, 618 private schools, and 73 religious schools, as well as non-enrolled children, who were mobilized to access free deworming treatment at a nearby school on Deworming Day.

3.0 Methodology

Process monitoring and coverage validation was conducted for the second annual round of deworming by an independent firm (Ipsos Pakistan), selected through a competitive bidding process.

To assess the quality of teacher training, as well as the implementation of deworming, Evidence Action randomly selected 41 of the 73 teacher training sessions for observation and training assessment, and 67 of the 2,046 targeted schools for observation and interviews of teachers, children, and parents by independent monitors on Deworming Day. The samples were distributed across the 6 implementing education sectors for representation and were calculated to ensure a 90% confidence in the data and allowing up to 10% margin of error.⁶

Parents residing in areas around the selected schools were interviewed on Deworming Day to gauge their level of awareness of the program. At each of the 67 visited schools, monitors targeted 3 parents (201 parents in total) for such interviews, 2 parents of children enrolled at the school and 1 parent of a non-enrolled child (in total, 134 parents of enrolled children and 67 parents of non-enrolled children were found for interview).

On Deworming Day, monitors interviewed head teachers and teachers regarding their plans for deworming, their treatment knowledge, and any sensitization activities they had carried out in schools and local communities. Monitors then observed the drug administration process to verify that the required deworming procedures were followed. After treatment, monitors randomly selected and interviewed one teacher and three enrolled children.

A few weeks after the MDA, monitors conducted coverage validation with the aim of determining the program reach and surveyed coverage and followed WHO guidelines while conducting the survey in schools and communities.

Table 2: Targeted and actual sample sizes

Monitoring activity	Total population/ number	Target sample size	Actual sample size
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⁶ A confidence interval of 90% calculates such that if the same population is sampled on several occasions and interval estimates are made on each occasion the resulting intervals would cover the true population parameter in approximately 90% of cases.

Teacher training sessions ⁷	73	38	41
Schools targeted for monitoring on Deworming Day	2,046	65	67
Parents to non-enrolled children interviewed on Deworming Day	-	67	17 ⁸
Parents to enrolled children interviewed on Deworming Day	-	134	184
Deworming Day Interviews			
Enrolled children interviewed	-	195	201
Head teachers interviewed		65	67
Teachers interviewed	-	65	67
Coverage Validation			
Number of children interviewed	-	3,382	3,307

4.0 Results

4.1 Review of teacher training

Monitors were dispatched to observe a sample of 41 teachers' training to measure the delivery and effectiveness of teacher training sessions. These trainings were facilitated by master trainers, who had received prior training facilitated by Evidence Action and IRD. Prior to the start of the teacher training sessions, the monitors held interviews with the trainers to gauge their preparedness to conduct the training sessions.

The findings indicate that 41 of 41 (100%) trainers interviewed prior to training start had attended a training within 15 days of the teacher training session, with 41 (100%) indicating that the training made them sufficiently prepared to conduct the day's sessions. The teacher training lasted a day, with each training on average having at least two trainers. At least one official from the education sector was present in 95% of training sessions, and a trainer from the health department in 3 of the trainings. Trainers indicated that they had used a mix of methods including Short Message Services – SMS (71%), phone calls (63%) and official memos (24%) to invite participants for the training. Of all the materials that were received, 83% of the trainers indicated that the availed materials were sufficient. Ninety-five percent of the trainers had stationary to provide to participants during training.

Following the interviews with trainers, the independent monitors made observations aimed at assessing the teacher training sessions. These form the content of the following sections.

4.1.1. Attendance during trainings

On average, 63% of expected schools had a representative in attendance at the monitored training sessions. From the 41 randomly selected and monitored teacher trainings, the use of an attendance register was noted across all (100%) trainings visited. In terms of school representation in training, the Deworming Day interviews with head teachers indicated that all (100%) of interviewed head teachers

⁷ There was over-sampling for all variables in the teacher training.

⁸ During visits to the community, only 17 parents of non-enrolled children were able to be found.

either attended or sent a teacher to the training, potentially implying that all (100%) of schools were represented in the training⁹. In addition, 80% of those in attendance were on time for the teacher training sessions.

4.1.2 Access to training materials

Once training sessions began, monitors observed distribution of all key materials to participants in 88% of training sessions. These key materials (monitoring forms, drugs) are important to aid in conducting teachers' training and be passed onto teachers as they conduct the teacher training sessions. The teacher training booklet, a critical resource while conducting teacher trainings, was distributed to all participants in 95% percent of training sessions. Drugs were distributed in all trainings, while banners and reporting forms were distributed in 88% of trainings (**Figure 1**). Additionally, stationery was availed to all participants in 83% of training sessions. Distribution of drugs, reporting forms, and training booklets was high, however efforts should be made to increase the distribution of all key materials together.

Figure 1: Materials distributed during teacher training (n=41)



At the training sessions in which drugs were distributed, drugs were provided to teachers in different forms: at least some sealed original containers were distributed in 100% of trainings, and to account for schools with small student populations, some sessions distributed unsealed original containers (7%), bags of tablets (7%), and in other tins (5%).

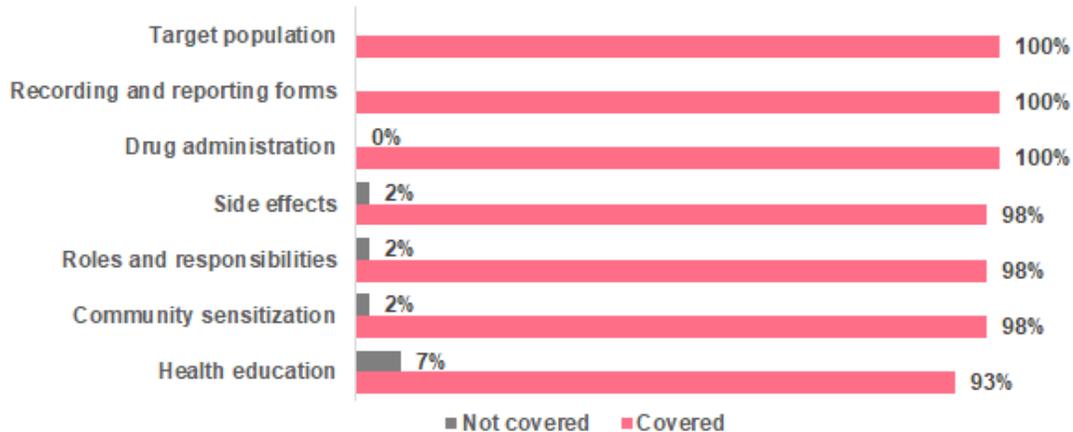
4.1.3 Topic coverage

Training sessions were also monitored to assess training topic coverage during the teacher training, with trainers required to cover a total of seven topics. These included the target population, health education, drug administration, side effects, recording and reporting forms, the roles and responsibilities of the various actors on Deworming Day, and community sensitization.

⁹ Attendance rates for the teacher trainings cannot be computed as the expected number of participants and schools at the teacher trainings was not captured in the survey

All the seven topics were covered in at least 93% of the trainings monitored with topics on the target population, recording and reporting forms, and drug administration being covered in all (100%) trainings (**Figure 2**).

Figure 2: Coverage of topics during trainings (n=41)



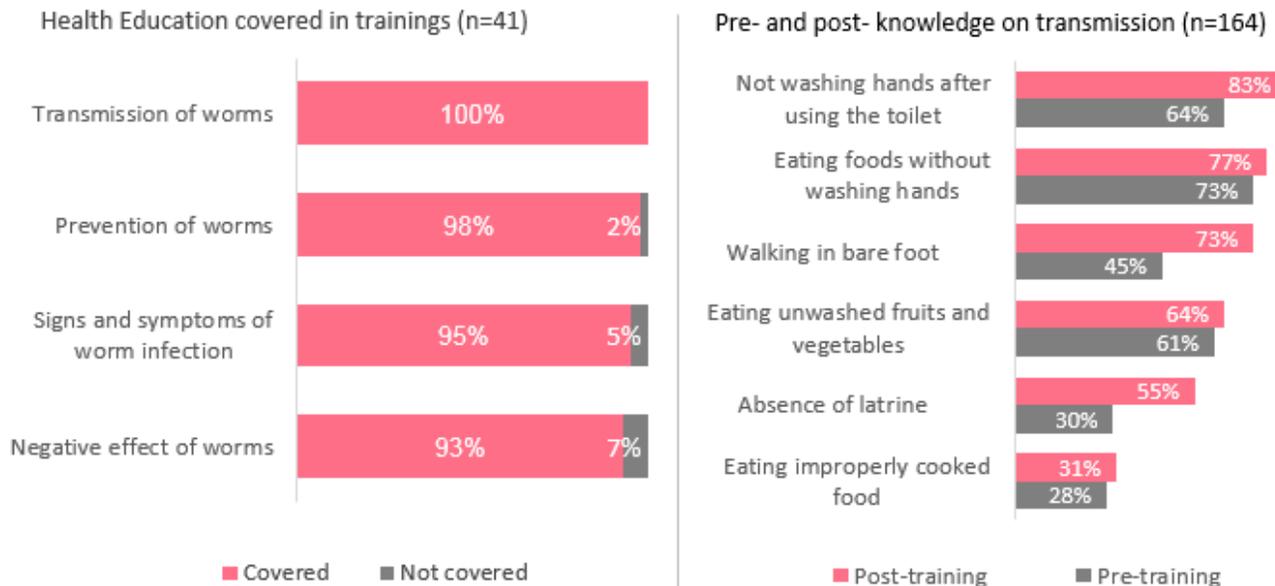
To gauge the effectiveness of the teacher training sessions in terms of knowledge transfer, a sample of 164 participants spread across the training venues was selected for both pre- and post-training interviews. It should be noted that the same set of participants that undertook the pre-interviews also were represented in the post-training interviews. For the majority of the aforementioned topics, monitors assessed coverage of individual messages as well as gauged participants' pre- and post-training knowledge levels as a proxy for determining the effectiveness of the training sessions.

The findings are presented below:

4.1.3.1 Health Education

Four messages were covered under the topic of health education. From monitor observations, the message on transmission of worms and prevention of worms was covered in all (100%) trainings monitored, while signs and symptoms of worms (95%) and negative effects of worms (92%) were also well covered (**Figure 3**).

Figure 3: Health education covered in trainings and pre- and post-training knowledge



Post-training interviews with participants revealed that 99% of those interviewed could cite at least one way a person gets infected with worms. Not washing hands after using the toilet (83%), eating food with unwashed hands (77%), and walking barefoot (73%) were the most cited means of worm infection in the post-interviews conducted.

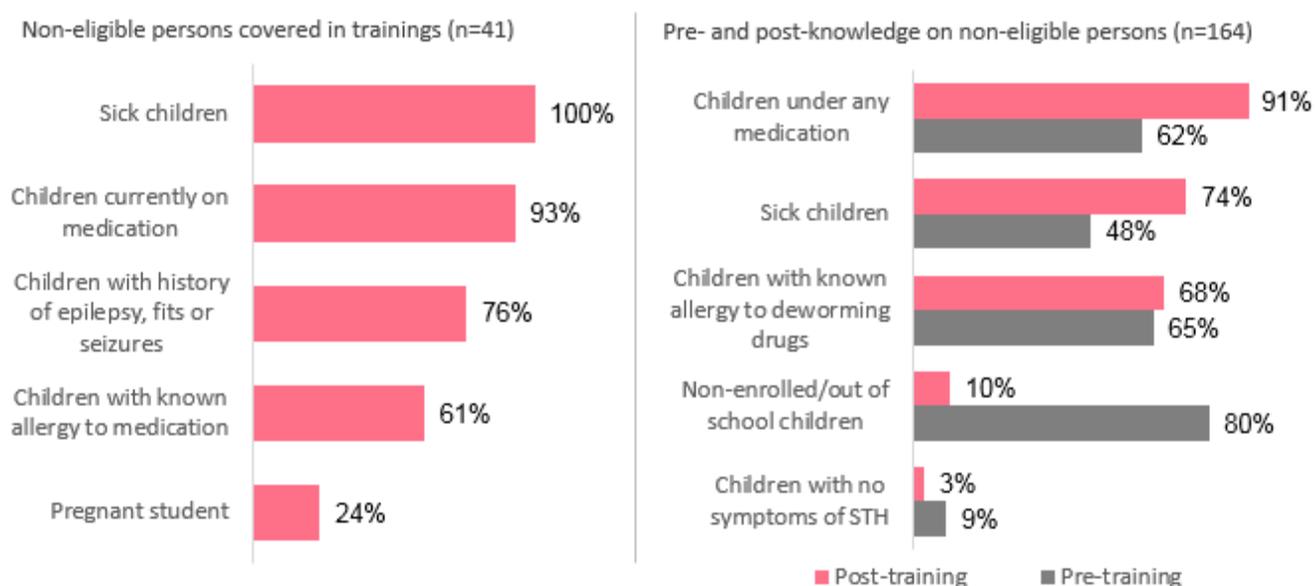
4.1.3.2 Target Population

Proper identification of the target group is critical in meeting the program target of treating all eligible at-risk persons. Ninety-eight percent of trainers highlighted that both the enrolled and non-enrolled children; aged 5-14 years formed the target group for this deworming round. The ICT deworming date was also echoed in all (100%) of the trainings monitored.

Equally critical to program success is the identification of the non-eligible individuals. The most described groups were sick children, children currently on any medication, children with a history of epilepsy, fits, or seizures (**Figure 4**).

During post-training interviews, monitors noted considerable increases in the proportion of participants citing children under medication (up 29 percentage points) as well as those who are sick as non-eligible for the medicines (up 26 percentage points). Also noteworthy are the drops in the proportions of teachers indicating that they would not provide drugs to children not enrolled in school or those without STH symptoms – a drop of 70 percentage points (**Figure 4**).

Figure 4: Non-eligible persons covered in trainings and pre- and post-training knowledge

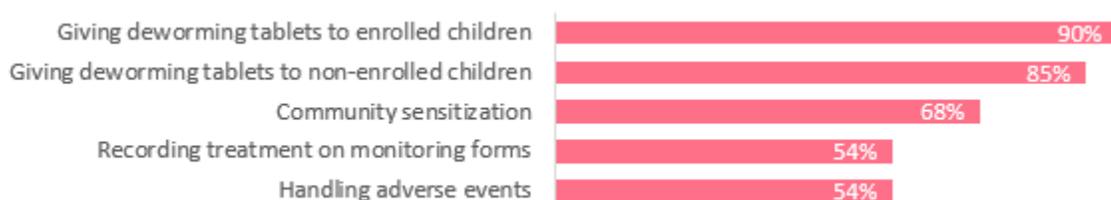


However, 32% of teachers are still likely to provide deworming drugs to children with known allergies and 26% are still likely to provide deworming drugs to sick children, and the program should focus on addressing both in future trainings.

4.1.3.3 Roles and Responsibilities

The success of the MDA hinges on proper identification of the contribution of various actors and the roles they play in the exercise. The session on roles and responsibilities of teachers were covered by trainers in all (100%) of monitored training sessions.

Figure 5: Teacher roles and responsibilities covered by trainers in teacher trainings (n=41)



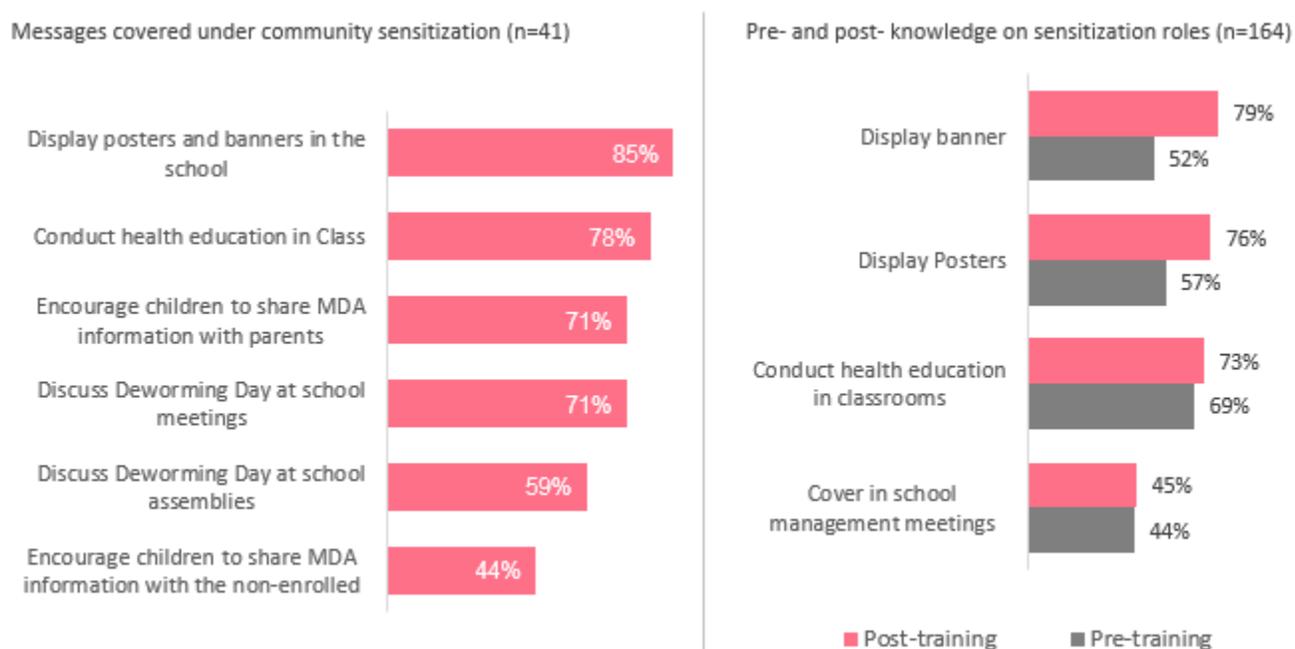
From monitor observations, messages centered on the provision of tablets to enrolled children and non-enrolled children (90% and 85%, respectively) received the most attention (**Figure 5**). However, information on community sensitization, reporting forms, and handling adverse events as teacher responsibilities were covered in at most 68% of observed training sessions.

4.1.3.4 Community & School Sensitization

Raising awareness of the MDA within the target geographic area and population is pivotal to the achievement of the target therapeutic coverage of at least 75% of the at-risk population. Monitors noted that 98% of trainers covered how to conduct sensitization activities prior to the MDA during the

sensitization and mobilization session of teacher training. In terms of actual roles of teachers within sensitization and mobilization, displaying posters and banners at schools (85%), conducting health education in class (78%), encouraging children to share MDA information with parents (71%), and discussing Deworming Day at school meetings (71%) were the most mentioned. However, only 68% of trainers mentioned community sensitization as a responsibility of schools and teachers and none of the individual topics were mentioned in more than 85% of training sessions. Given that community and school sensitization is crucial to Deworming Day success, trainers should be encouraged to make use of these opportunities to convey roles and responsibilities as well as how to deliver messages about mobilization and sensitization activities (**Figure 6**).

Figure 6: Teacher sensitization messages and participants’ pre- and post-knowledge



During post-training interviews, there were increases from pre-training knowledge in all messages of community sensitization. However, even after the increase, only 73% of teachers understand that it is their responsibility to conduct deworming health education in classrooms prior to MDA and only 45% of teachers knew to discuss the upcoming MDA in school management meetings (**Figure 6**).

The most cited key messages that teachers indicated they would share with the community as revealed from post-training interviews were that drugs are free (79%), that the target children are aged 5-15 years (77%), and that there was one deworming day for the whole of ICT (65%).

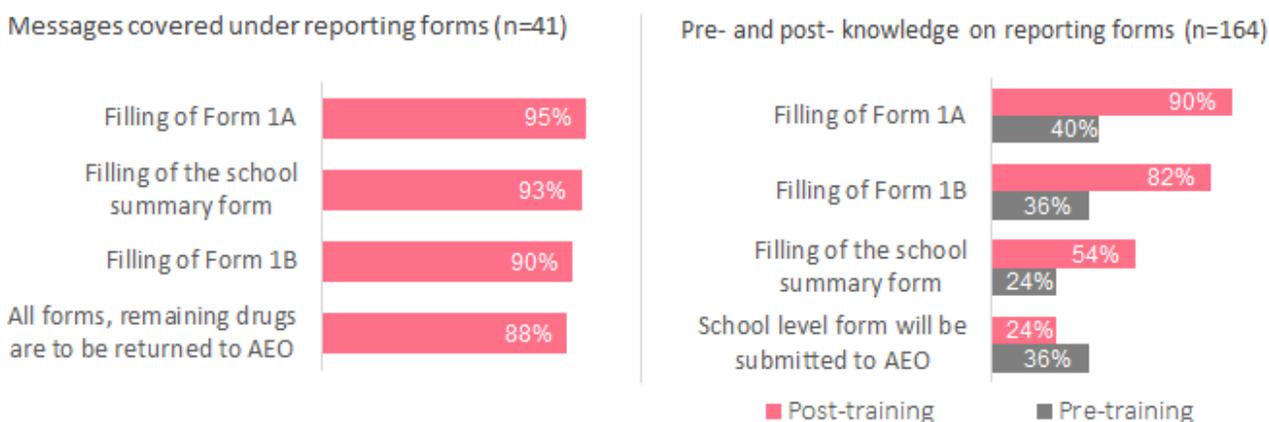
4.1.3.5 Recording and reporting forms

During MDA, teachers are required to fill out three forms including Form 1A (to record treatment of the enrolled children), Form 1B (to record treatment of the non-enrolled), and the school summary form, which are crucial to calculating coverage and program success. Trainers are also required to inform

teachers that all forms as well as any remaining drugs post-MDA are to be returned to the Area Education Officer (AEO) and Directorate of Basic Education Community Schools (BECS).

Based on monitor observations, at least 88% of all trainings covered all aspects of recording and reporting forms. A high proportion of trainers (95%) highlighted the need to record treatment of the enrolled children to form 1A; however, this knowledge was not properly understood by 10% of trainees based on post-training knowledge assessments (**Figure 7**).

Figure 7: Messages covered under reporting forms and participants' pre- and post-training interview



From post-training interviews, 90% of the teachers understood that they are responsible for completing Form 1A and 82% knew that they are responsible for filling Form 1B. However, only 54% of teachers knew that they are to complete the school summary form and only 24% knew that it should be submitted to the AEO.

During post-deworming interviews with head teachers, monitors noted that 28% of respondents did not know that Forms 1A and 1B would feed into the school summary form. Further findings during Deworming Day indicated that 22% of head teachers did not know to submit the summary to the Area Education Officer. This should be an area of focus in future trainings to ensure that the cascade process is well covered to those actively involved in this activity.

4.1.3.6 Drug Administration

Based on monitors' observations, the drug administration topic was covered in all (100%) training sessions, and all sub-topics being covered in at least 93% of trainings monitored (**Table 3**).

Table 3: Messages on drug administration covered in teacher trainings (n=62)

	Percent
Complete class level summary form as the child is treated	100%
Check child's mouth to make sure that each child chews and swallows the tablet	100%
Under the program, all drugs are free, safe and effective	100%
STH drug is Mebendazole	98%
One Mebendazole Tablet to be given to each child	98%

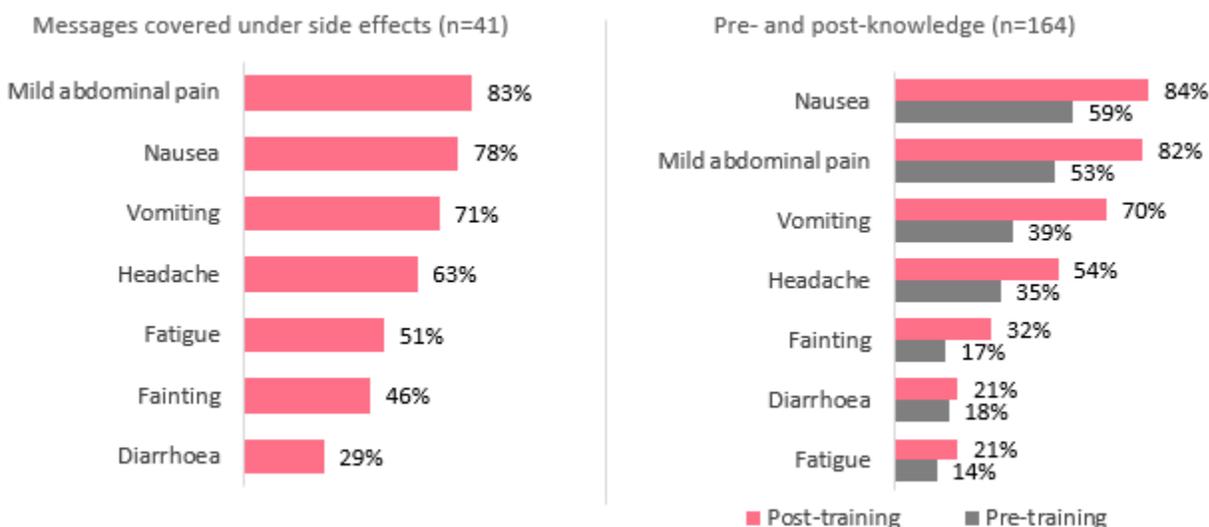
Names of all enrolled children need to be copied from the class register on to class level summary.	98%
For non-enrolled children use Form 1B to record treatment	95%
Drugs must be stored in a clean, safe, dry and cool location	93%

4.1.3.7 Side Effects

Side effects are potential outcomes of any treatment that may or may not be directly related to the treatment being provided. To ensure that teachers were effectively equipped to handle any such cases, trainers covered information on possible side effects and how to handle them in 98% of training sessions. In 93% of training sessions, the trainers provided teachers with the relevant health officer contact information to help with potential side effects. Mild abdominal pain, nausea and vomiting were covered in 71% or more of the trainings, while fainting and diarrhoea were only covered in less than half of trainings monitored (**Figure 8**).

The proportion of participants that could cite at least one side effect was 99% in the post-training, with nausea (84%) being the most cited side effect in post-training interviews, followed by mild abdominal pain (82%) and vomiting (70%). However, few teachers cited other side effects such as fainting (32%), diarrhoea (21%), and fatigue (21%) during post-training interviews.

Figure 8: Messages on side effects and participants' pre- and post-knowledge on side effects



In terms of managing any children with any side effects, the majority of teachers in post-training interviews cited giving reassurance to any affected child that their symptoms will likely pass quickly (70%) as well as separating any child suffering from the rest of the children (59%). In the event of any serious or persistent adverse effect lasting more than 2 hours, 70% of participants from the post-training interviews cited that they would take the children to the nearest health facility (a 5 percentage point increase), a finding in line with the recommended practice in the event of any such cases.

4.1.4 Training Feedback

In a bid to improve future training, monitors sought feedback from participants as regards the overall training rating as well as potential areas for improvement. On a 1-5 scale (1 implying so bad, 5 implying very good), both the overall training as well as the trainers were given a 4.4 and 4.5 rating, respectively. In addition, the organization of the training session, including invitation, preparation, and distribution had an average rating of 4.2. Conclusively, it can be said that participants thought that the trainings were good.

4.2 Community & School Sensitization

Sensitization prior to conducting the Deworming Day is an evidenced key ingredient for MDA success. On Deworming Day, monitors held interviews with 184 parents of enrolled and 17 parents of non-enrolled children. Key to this interview was to gauge awareness of the upcoming MDA, as well as their sources of information for the MDA. At the end of the interviews, monitors also sought to determine what proportion of parents would be sending their children for deworming as a proxy for the effectiveness of the sensitization efforts.

4.2.1 Parent Demographics

By gender, there was a large split (33% male and 67% female) for parents of children taking part in deworming. In terms of primary occupation, the majority of parents indicated that they were stay-at-home parents (52%), followed by those running small businesses (19%). These proportions (primary occupation) were similar across both sets of enrolled and non-enrolled parents. Both sets of parents also had an average of 2 children in the target group (5-15 years). The average age of children in the households was 9 years.

Thirty-six percent of parents reported that secondary school was the highest level of education they had achieved, with a higher proportion among the parents of the enrolled (37%) as compared to 24% among those for non-enrolled children. Nineteen percent of parents indicated that they had completed primary school, and 18% for those that indicated that university was their highest level of education as well as those that had not achieved any level of schooling.

4.2.2 Parents knowledge on deworming

Ninety-two percent of parents (up from 73% in the last round) interviewed on Deworming Day were aware of deworming happening within their communities, with this proportion higher among parents of the enrolled children (93%) as compared to their non-enrolled counterparts (82%).

Monitors posed further questions to parents that were aware of the upcoming MDA as regards their knowledge of the date of deworming, target age group and what the treatment was for. This information is embedded in the various sensitization sources.

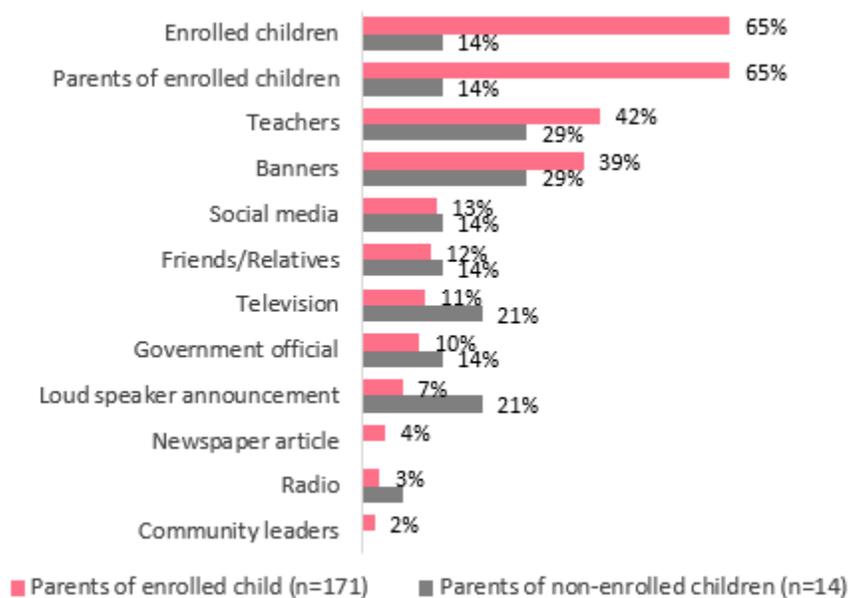
Among parents who were aware of Deworming Day (92% of parents), 92% knew the correct deworming date, and was higher among the parents of the enrolled children (94%) compared to only 71% among

those for the non-enrolled children. Parental knowledge of the purpose of medicines as treating worms was very high (overall proportion at 98%; 98% for parents of enrolled children and 100% for parents of non-enrolled children). But the proportion of parents knowledgeable as regards the target age-group of 5-15 years was lower at 76%, with 77% of the parents of enrolled children and 64% for the non-enrolled children. Emphasizing the target population age group, benefits and purpose of deworming and date of deworming is critical for program success.

4.2.3 Sources of Deworming Day information

The majority of the parents of enrolled children heard about deworming from either enrolled children (65%) or other parents to these children (65%), while parents to non-enrolled children cited teachers (29%) or banners (29%) as main sources of this information (**Figure 9**).

Figure 9: Medium of sensitization as cited by both sets of parents



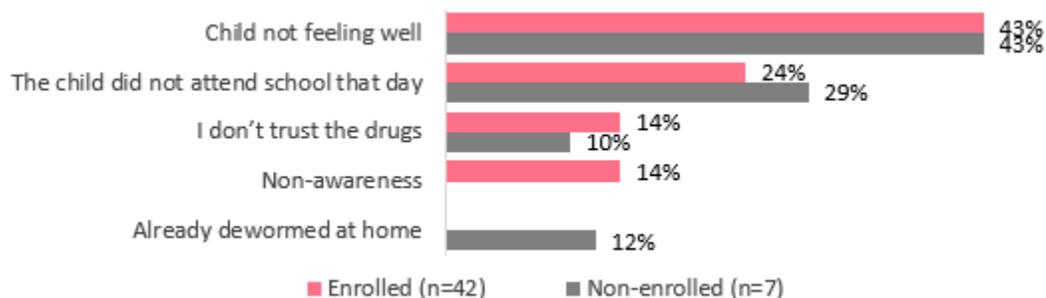
Enrolled children (39%), teachers (34%), and television (30%) were the most preferred means of receiving information on future deworming activities by all parents, while parents of non-enrolled children also cited that they'd prefer information through banners hung in the community (41%) and loudspeaker announcements (35%). Subsequent sensitization plans should leverage these findings, as they are in line with the parents' preferred means of receiving future deworming information.

4.3.4 Parents' reasons for not sending children for deworming

Even though 92% of parents were aware of deworming, only 73% of parents interviewed by monitors indicated that they would send at least one of their children for deworming, with this proportion at only 75% for the parents of the enrolled children and 46% for the non-enrolled children. The majority of the parents (43% for both enrolled and non-enrolled) who indicated that they would not be sending any of their children for deworming indicated that the children were unwell (**Figure 10**). Additionally, up to

14% of parents said that they do not trust the drugs or were not aware of deworming, both of which can be influenced in the next round of deworming through increased advocacy and mobilization efforts specifically targeting parents.

Figure 10: Reasons cited by parents for not sending children for deworming



4.3 Deworming Day assessment

A sample of 67 schools were randomly selected for monitoring on Deworming Day. The purpose of these visits was to assess if deworming was being conducted at the schools, and if so, to assess the knowledge and capacity of teachers to administer tablets and observe if the proper procedures were being followed. Of the 67 randomly selected schools, monitor visits revealed that all 67 (100%) were conducting deworming activities on Deworming Day, and full observation monitoring was completed at all of these 67 schools.

Further findings also indicated that 85% of schools had made plans to deworm any non-enrolled children present on Deworming Day, with non-enrolled children noted in 61% of schools monitored.

4.3.1 Knowledge of deworming information

All (100%) head teachers interviewed on Deworming Day indicated that either they (75%) or another teacher (25%) had attended a training session in preparation for Deworming Day within 15 days of the MDA. A follow-up interview with the teachers also revealed that 84% of them had either attended the training or been sensitized within the school on how to administer deworming drugs.

Ninety-six percent (96%) of head teachers interviewed knew the correct age group for STH treatment to be between 5-15 years and 88% of teachers were knowledgeable on the same. Knowledge of the correct drug for treatment being mebendazole was higher among teachers (99%) as compared to head teachers (87%), while 97% of teachers and all (100%) head teachers knew the correct drug dosage of one tablet per child. The relatively low knowledge of the correct age group for teachers and knowledge of correct drugs among head teachers should be flagged, given their roles in the administration of the drugs.

4.3.2 Adherence to MDA procedures

To provide quality assurance of the MDA administration, monitors observed whether deworming teams adhered to key drug administration steps. Results show high levels of compliance with the recommended practices as passed on during the training (**Table 3**). Over half of the teachers dewormed children within the classrooms (51%), 43% of teachers set up central deworming stations, 3% dewormed children in the principal's office, 1% on the school roof, while the other 1% dewormed in the clerk's office. In terms of manning the deworming stations, schools adopted various approaches, with one or more teachers manning a centralized area in most schools (46%) while each teacher dewormed in their own class (25%) in some others. A few teachers going from class-to-class (15%), a single teacher conducting the activity from class-to-class (12%), and conducting deworming during assembly (1%) made up the remaining observations.

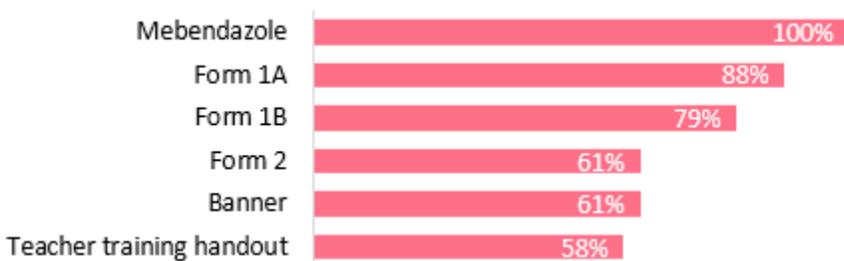
Table 4: MDA procedures observed by monitors during drug administration (n=67)

MDA practice	Percent
The teacher used Forms 1A and 1B to record treatments	99%
The teacher marked Form 1A and Form 1B as treatment was being administered	97%
The teacher had transferred names from the class register to Form 1A	97%
The child was given one mebendazole tablet	94%
There was a designated teacher to treat the non-enrolled children	61%
Spoilt drugs (those that fell on the floor, were spat out as well as had water spills) were thrown away (n=9)	44%

In 4 cases, teachers were observed to give more than one mebendazole tablet to a child (6%), while 97% of teachers used the correct forms to record treatments as they occurred. However, 2 of the teachers that did not fill the forms during administration were observed to tick off all children before or after deworming. In 97% of cases, teachers were observed to have transferred the names from the class register to Form 1A before the deworming exercise began. In 61% of observed schools, the schools had designated a teacher for the treatment of non-enrolled, and it is positive to note that non-enrolled children were treated in 61% of schools, though perhaps this rate would rise with more schools planning for non-enrolled children.

The availability of key materials for deworming is one of the backbones for a successful MDA. Availability of drugs and the primary monitoring forms (Form 1A and 1B) was generally high (**Figure 11**).

Figure 11: Materials available on MDA as observed by monitors (n=67)



On the other hand, banners, in spite of distribution in 88% of trainings were only observed on display at 57% of schools monitored on Deworming Day. The same findings apply to the teacher training handout, which was distributed in 95% of trainings monitored, but available in only 58% of schools. On the premise of this, the importance of distribution of all materials by Deworming Day needs to be emphasized in training sessions.

From interviewing head teachers at the schools prior to the drug administration process, 100% of schools had drugs available; follow-up interviews with the head teachers after the process of drug administration at the schools revealed that all schools (100%) had sufficient drugs to deworm all children present.

4.3.3 Management of side effects

Monitors conducted interviews with 59 medical officers and/or Union Council Medical Officers (UCMO) to determine if they encountered any calls for assistance as regards helping teachers with management of severe adverse effects. Forty health officers (68%) reported that they were contacted by teachers regarding the deworming program, with 63% of those calls regarding side effects management.

Twenty observations of incidences of severe adverse events were reported for this deworming round. However, head teachers reported observations of 36 (61%) mild adverse events such as headache, nausea, mild abdominal pain, and vomiting. This underlines the already highlighted need for trainers to comprehensively cover all side effects during training, as well as share contacts of the medical officers able to professionally aid in the event of any observed occurrence.

4.3.4 Water, Sanitation and Hygiene

During school visits, monitors also took note of school structures, and the presence of latrines and handwashing facilities within the schools. In terms of school structures, the majority of schools had their roofs made of concrete (96%), which was also the main material used on the school building walls (91%). Most of the school floors were made of concrete (87%), while some of the floors were made of bricks (4%). Three schools (4%) lacked any hand washing facilities, while 25% had facilities with only water, and 70% had facilities with soap and water. In addition, all schools (100%) also had latrines. On average, observed schools had 5 latrines for boys and 4 for girls. Among these, the pit latrine with slab was most

common (55%); followed by those that used bucket flush systems (24%), and those without a slab (6%) among others.

4.4 Coverage Validation

Coverage evaluation surveys were administered within six weeks of the MDA in two randomly selected education sectors of Islamabad Capital Territory. These included one randomly selected urban sector, Islamabad Metropolitan Corp, and one randomly selected rural sector, Tarlai Kalan Qh, for a total of two sectors sampled. Education sectors were then further subdivided into subunits where coverage validation was administered. Coverage validation intended to achieve the following main objectives:

1. To validate the reported coverage numbers as provided by head teachers
2. To identify reasons for non-compliance

The sample size was determined per WHO guidelines using a probability proportionate to estimated size (PPES) approach. Subunits from the full list of blocks in the sector were selected and divided into segments of approximately 50 households. A sample of 30 subunits were selected from each district and in each, one segment was randomly selected.

In the 30 segments, monitors administered a household survey to all at-risk persons within the visited households, with the aim of gathering a representative perspective from the non-enrolled population. At the end of the household survey administration, the field officer with the guidance of a parent of an enrolled child or community elder would request for information of the school that most children in the selected segment attend and then go to that school to administer a school survey. The proportion of household to school surveys was determined using enrollment rates. In each school, the sample was then further distributed equally per class/grade level to select the pupils that would participate in the survey. Please note that when selecting schools only specific types of schools, which had been targeted during implementation, were targeted for interviews during CES. This means that the surveyed coverage obtained especially for the enrolled population will not reflect the entire at-risk population but only the population in the types of school that were targeted during implementation.

In all, 537,287 school age children were targeted for deworming, out of the total 573,880 school age children at-risk for STH in ICT. For the two education sectors in which coverage validation occurred, 150,461 children from 494 schools were targeted in Islamabad Metropolitan Corp and 107,475 children from 485 schools were targeted in Tarlai Kalan Qh. As coverage validation was only conducted in two implementation units of ICT, these rates are not representative of the entire territory and should be interpreted with caution. The following are the results of coverage validation in these two districts.

Table 4: Coverage Validation Survey Results

	Program Reach			Surveyed Coverage			Denominator ¹⁰
	Mean (%)	% Lower bound CI	% Upper bound CI	Mean (%)	% Lower bound CI	% Upper bound CI	
Survey area							
Islamabad Metropolitan Corp	88%	87%	90%	69%	67%	72%	1,437
Tarlai Kalan Qh	83%	81%	84%	68%	66%	70%	1,870
Disaggregation by enrollment status							
Islamabad Metropolitan Corp							
Non-Enrolled	67%	54%	78%	16%	8%	27%	64
Enrolled	89%	88%	91%	72%	69%	74%	1,373
Tarlai Kalan Qh							
Non-Enrolled	82%	72%	89%	30%	20%	40%	88
Enrolled	83%	81%	85%	70%	68%	72%	1,782
Disaggregation by gender							
Islamabad Metropolitan Corp							
Male	88%	85%	90%	69%	65%	72%	766
Female	89%	87%	92%	70%	66%	73%	671
Tarlai Kalan Qh							
Male	82%	79%	84%	69%	66%	72%	1,067
Female	84%	81%	87%	67%	63%	70%	803

The findings indicate an overall program reach¹¹ of 88% in Islamabad Metropolitan Corp and 83% in Tarlai Kalan Qh (**Table 4**). The surveyed coverage (the proportion of interviewed individuals who swallowed the drug) was 69% in Islamabad Metropolitan Corp and 68% in Tarlai Kalan Qh. Adjusting for the fact that the program targeted only a 94%¹² of the overall at-risk SAC population in ICT, the 69% and 66% surveyed coverage rates of targeted SAC therefore indicate that 65% and 64% of the total at-risk SAC population swallowed the drug in Islamabad Metropolitan Corp and Tarlai Kalan Qh, respectively. While the CES was only conducted in two sectors, and therefore not representative of the entire province, we can infer that the overall surveyed coverage was found to be below the WHO and Y2 program target of 75% therapeutic coverage.

A disaggregation by gender revealed a comparable (no more than 2 percentage points difference) program reach and surveyed coverage for both males and females, indicating that the program did not reach more of one gender. However, the disaggregation by enrollment status indicated a much higher program reach and surveyed coverage for the enrolled than for the non-enrolled population. The

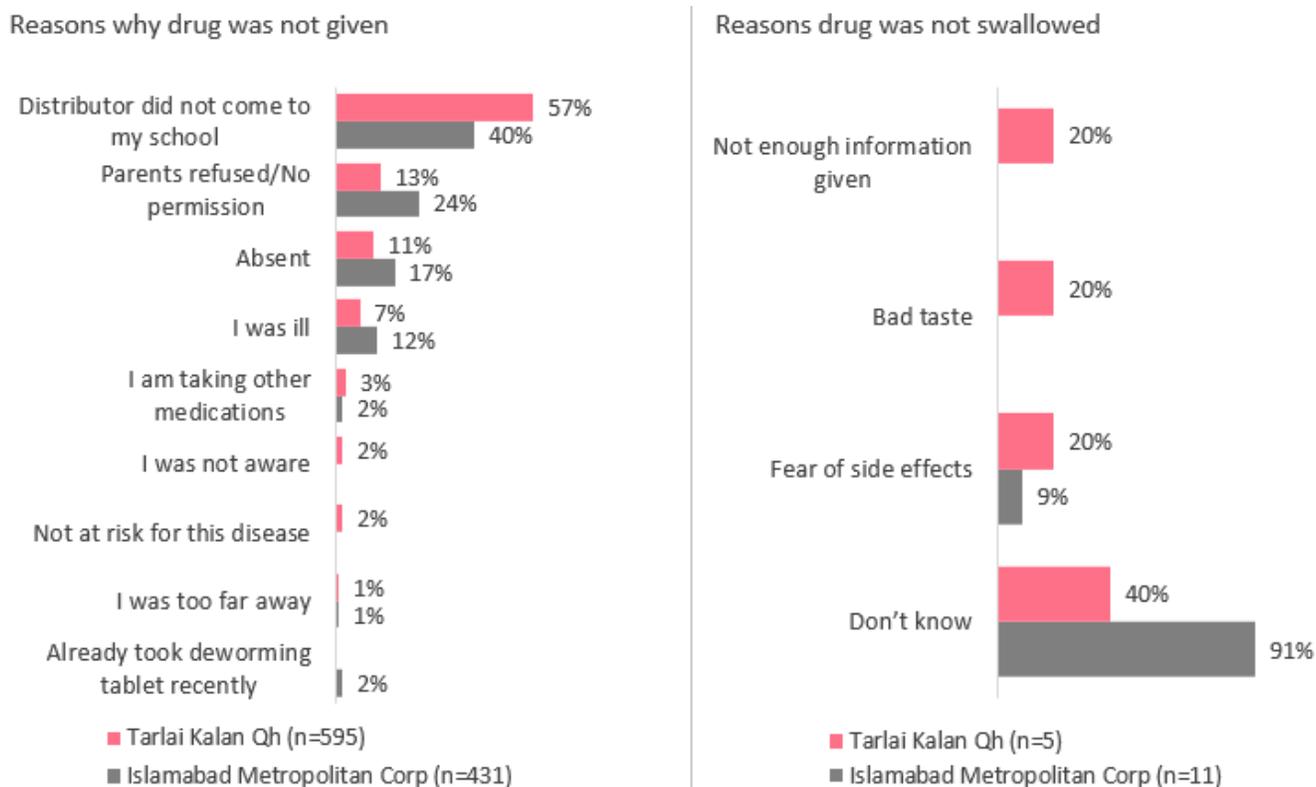
¹⁰ Number of children interviewed

¹¹ The “program reach” refers to the proportion of targeted children interviewed who were offered the drug, regardless of whether it was ingested.

¹² Overall, 94% of SAC in ICT were targeted for deworming treatment, targets rates disaggregated to the education sector were not available at the time of this report.

surveyed coverage particularly in Tarlai Kalan Qh was particularly much lower (52 percentage points) than the program reach, indicating low compliance rates.

Figure 12: Reasons drug was not given and not swallowed



The main reasons provided by those who did not receive the drug were that the distributor did not come - Islamabad Metropolitan Corp (57%) and Tarlai Kalan Qh (40%). For those who did not swallow the offered drug, the main reason was fear of side effects (**Figure 12**).

Aside from the present deworming, monitors also sought to determine if respondents had received any deworming tablets within the last six months of the Deworming Day. The findings indicate that only 3% of respondents had received the tablet prior to Deworming Day in the last six months. Among the 114 children that received a deworming tablet within the 6 months of Deworming day, the majority indicated that the drug was taken from their homes (61%) while the remaining children either took the tablet from a health center (25%) or didn't specify (25%). This low self-reported proportion further underlines the importance of having the MDA.

5.0 Conclusion

What worked well

1. The overall execution of the training was excellent. Majority of participants were on time (80%), trainers also indicated that they were sufficiently prepared to train in all (100%) cases. All seven training topics were covered in at least 90% of the teacher trainings. Post-training feedback was also very positive for all areas including preparation, trainers, and the sessions itself. This underlines the commitment of the different stakeholders towards achieving a successful MDA.
2. In general, community members were well sensitized to the deworming activities, based on interviews in the community on deworming day. Ninety-two percent of community members interviewed were aware of deworming day activities, though there is clear room for improvement with only 65% of parents of non-enrolled students aware. Teachers and enrolled students were the most common source of information, and were also the most preferred source by parents, and therefore should be leveraged to further sensitize communities about Deworming Day.
3. All (100%) of monitored school that were visited on deworming day were observed to be conducting deworming, and adherences key MDA procedures was good, with the teacher using forms 1A and 1B to record treatment in 97% of schools, the correct dosage provided to most children at 94% of schools, pointing to a successful Deworming Day. In addition, 85% of schools had plans in place to deworm non-enrolled students, and 61% of schools were observed to deworm non-enrolled students; both commendable, with room for improvement in subsequent rounds.
4. Key materials for the deworming were available and sufficient in most of the schools. Drugs were available and sufficient in all schools, while reporting forms used in 97% of schools were sufficient for the exercise in 90% of these schools.

What needs to improve (recommendations)

1. During the monitored teacher trainings, 63% of expected schools had a representative in attendance. Low school turnout at trainings due to issues with school onboarding, communication, or planning, equates to low overall coverage. Exact reasons for lower numbers of expected school attendance for all schools (public, private and religious) need to be identified, rectified and prioritized before the third annual round of MDA in ICT.
2. While overall timely attendance by participants was at 80%, the 20% gap represents an opportunity for the program to further work on modalities that enhance prompt communication with all stakeholders to encourage head teachers to promptly request teachers to make necessary preparations to attend the training.
3. Only 54% of the teacher trainings covered that teachers' roles and responsibilities include recording treatments on monitoring forms and handling adverse events. It is important that

even though there are standalone sessions on reporting and recording forms and adverse event management, it is made clear that these activities are the responsibility of the teacher/s conducting deworming at their respective schools. Moreover, only 68% of trainers mentioned community sensitization as a responsibility of schools and teachers. Key roles and responsibilities within sensitization and mobilization of communities and schools needs to be emphasized throughout the entire cascade in the next round of deworming. This will aid in increasing parent awareness and willingness to let their children participate in deworming on Deworming Day, and therefore, directly influence the overall treatment coverage.

4. From post-training interviews, 90% of the teachers understood that they are responsible for completing Form 1A and 82% knew that they are responsible for filling Form 1B. However, only 54% of teachers knew that they are to complete the school summary form and only 24% knew that it should be submitted to the AEO. According to the ICT reverse cascade plan, teachers are to submit Form 1A and Form 1B to the head teacher to consolidate into the school summary form (Form 2) and submit to the AEO. The reverse cascade needs to be clear, easy to execute and discussed throughout the cascade so that all school reports are collected, aggregated and reported in a timely manner.
5. In spite of the high overall awareness of the MDA (92%), the proportion of parents willing to send their children for deworming was low, at only 73% with this proportion at less than a half (46%) of the parents of non-enrolled children. Where feasible, this report suggests further investment in the use of community banners and loudspeaker announcements, preferable sources of MDA information for parents of the non-enrolled.
6. Some practices observed during MDA need to be addressed during future teacher trainings:
 - a. In 61% of observed schools, there was a designated teacher to treat non-enrolled children, which translated to non-enrolled children being treated in 61% of schools. The program should encourage schools to assign a designated teacher focused on the unenrolled population as this seems to directly improve the reach of non-enrolled children.
 - b. Administering of more than one mebendazole tablet was observed in 6% (4 out of 67) schools monitored during Deworming Day. This points to the 2% of teacher training that didn't cover this message under drug administration and underlines the importance of comprehensive topic coverage.
 - c. In 3% of monitored schools, teachers were found filling monitoring forms before or after the exercise. This practice could give a false picture of the true proportion of children treated during the MDA.
7. On Deworming Day, efforts should be made to ensure that teachers are fully prepared to conduct the activities. Interviews with teachers (not including head teachers) indicated that only 84% had either attended a training or been sensitized by a teacher that did attend training for drug administration on Deworming Day. Further, only 88% of interviewed teachers could

correctly identify the eligible age group for deworming treatment. Preparation for the important tasks in carrying out deworming day would be a key priority for the program to ensure proper treatment and success.

8. Coverage validation results indicate that none of the implementation units sampled achieved the 75% therapeutic coverage recommended by WHO for a successful MDA, with the majority of respondents that did not receive the drug citing either that the deworming tablets were not distributed at their respective school or parent refusal. The first response aligns with the finding that lower numbers of schools attended the training for deworming and therefore participated in deworming on Deworming Day, which again emphasizes the need to carefully plan for and advocate for deworming across all schools, particularly private and religious schools prior to the cascade. Additionally, messages on deworming for the next round should be focused on emphasizing the need, safety and benefits of deworming to break the reported parent refusal.

Recommendations for the next monitoring round

1. Recheck survey questions and answers that correspond with Figure 12, specifically reasons why drugs were not swallowed and why a good majority of respondents said they didn't know why they did not swallow the drugs.
2. During the post-training interviews with teachers and trainers, add questions to surveys to collect ways in which the training cascade can be improved.
3. Recheck surveys for questions that necessitate prompting, i.e. how community members heard about deworming.
4. Prior to the next round of independent monitoring, recheck survey questions pertaining to the reverse cascade and align with the strategy for the reverse cascade as in the operational plan. Furthermore, training materials need to be aligned with specific plans for reverse cascade as in the operational plan as well.
5. Contextualize community and school sensitization questions within surveys prior each round of independent monitoring using the ICT strategy and plans for sensitization within the operational plan.
6. For the next round of independent monitoring, coverage validation survey questions and results should be disaggregated by implementation unit and by school type, public, private and religious. In general, all KPI's listed in the table at the end of the Executive Summary will be disaggregated by school type, in order to further tailor strategies prior to subsequent rounds of MDA. However, carrying this disaggregation throughout the entire report would create too many data points, making it difficult to clearly analyze independent monitoring results.