



Independent Monitoring and Coverage
Validation of National Deworming Day
February 2016 School and *Anganwadi* Based
Mass Deworming Program in Tripura

REPORT

July, 2016

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ACRONYMS

ANM	:	Auxiliary Nurse Midwife
ASHA	:	Accredited Social Health Activist
AWC	:	<i>Anganwadi</i> Center
AWW	:	<i>Anganwadi</i> Worker
CMS	:	Centre for Media Studies
IEC	:	Information, Education and Communication
MoHFW	:	Ministry of Health and Family Welfare
NDD	:	National Deworming Day
ORS	:	Oral Rehydration Solution
PO	:	Project Officer
STH	:	Soil Transmitted Helminths

EXECUTIVE SUMMARY

The World Health Organization (WHO) estimates that more than 1.5 billion people globally, or 24% of the world's population, are infected with soil-transmitted helminths (STH). Over 270 million preschool-age and over 600 million school-age children live in areas where these parasites are endemic, and face physical, nutritive and cognitive impairment as a result of preventable STH infection. In 2001, WHO developed a strategy to control worm infection and recommended periodic mass deworming for all people living in endemic areas, with annual treatment in places where prevalence is between 20-50%, and twice annual treatment where prevalence exceeds 50%.¹

India has an estimated 220 million children at risk of STH infection-almost one quarter of the global burden. To combat the burden of STH, the Government of India launched National Deworming Day (NDD) as a part of National Health Mission in February, 2015 to deworm all children between 1-19 years of age. The program aims to administer albendazole tablets to all children in this age group, including unregistered (1-5years) and out-of-school (6-19 years) children, in schools and *anganwadis*. The second round of NDD in Tripura was observed in eight districts of the state on **February 10, 2016** followed by mop-up day on **February 15, 2016**. Evidence Action-Deworm the World Initiative as the technical assistance partner coordinated and facilitated planning and implementation of the deworming round in the state.

Evidence Action engaged an independent research agency to provide process monitoring on both deworming day and mop-up day to assess the preparedness of *anganwadis* and schools to implement deworming, followed by coverage validation to evaluate accuracy of the reporting data and coverage estimates. Approvals for the survey were obtained from Directorate of Family Welfare & P.M, Government of Tripura.

On NDD and mop-up day, 85 monitors visited 180 randomly selected government/government aided and private schools and 160 nearby *anganwadis* to observe the ongoing deworming activity. Due to the Tribal Council elections in Tripura, the coverage validation phase was delayed by around 10 days. It was undertaken between February 29, 2016-March 4, 2016, during which monitors visited randomly selected 270 government/government aided and private schools and 240 *anganwadis* to verify their reported treatment figures. Findings from independent monitoring highlight that there was a very high degree of program uptake, with the relevant inputs available at schools and *anganwadis* in a timely manner:

- Around 96% of schools and 97% of *anganwadis* observed deworming on deworming day and mop-up day.
- 99% of schools and 92% of *anganwadis* reported receiving sufficient drugs for deworming.

¹**WHO: Soil-transmitted helminth infections.**
www.who.int/mediacentre/factsheets/fs366/en/

- 96% of schools and 98% of *anganwadis* received the posters and banners for deworming program.
- 90% of school headmaster/teachers and 97% of *anganwadi* workers (AWWs) attended training for recent round of deworming.
- Headmasters/ teachers from nine out of the 20 private schools surveyed reported to receive training for deworming.
- Awareness among teachers and AWWs about causes of worm infection, possible adverse events, and adverse events protocols was quite good.
- More than 60% of all school principals, teachers and AWWs were able to accurately mention at least one symptom of adverse event.
- 64% of schools and 84% of *anganwadis* followed correct reporting protocols for recording the number of children dewormed on NDD and mop-up day.
- A substantial proportion of AWWs did not have a list of unregistered preschool-age children (63%) and out-of-school children (57%).
- All school-enrolled children interviewed during coverage validation reported to receive the deworming tablet.
- With substantial compliance to recording protocols, coverage validation data for school enrolled children exhibited an inflation of 13% (Verification factor of 0.88) in reporting of dewormed children.

The monitoring exercise highlights opportunities to strengthen future rounds. For instance, while training attendance was generally high, ensuring timely communication of training dates to schools and *anganwadis* would likely help to increase attendance, strengthening teachers' capacity for effective implementation in schools. Efforts are also required to ensure that teachers who attend training also impart adequate training to other teachers in the school. The contact database of functionaries across all stakeholder departments need to be regularly updated to ensure information on the program is reaching the key audience in a timely manner to allow for action as needed.

Unlike other states, there was no integrated distribution of deworming kits in the state during this round; in future, integrated distribution would enable more widespread use of Information, Education and Communication (IEC) materials for community mobilization and awareness, potentially improving the reach of the program. In addition, tracking the distribution cascade to identify and fill gaps in a timely manner will likely improve the availability of IEC materials. Enhanced engagement of ASHAs and AWWs is also critical for program success. Continuing incentives approved by the national government for ASHA workers will provide motivation to these workers to mobilize unregistered and out-of-school children on designated deworming days and proactively prepare the list of all out-of-school and unregistered children to provide to *anganwadis*. Schools and *anganwadis* should be encouraged to retain a copy of school and *anganwadi* reporting form after submission. Inflation in reporting suggests that additional efforts are needed to increase accuracy of program coverage reporting, including an increased emphasis on the importance of reporting protocols during training, in IEC materials, and in reminder SMSs.

MONITORING AND EVALUATION

Study Background

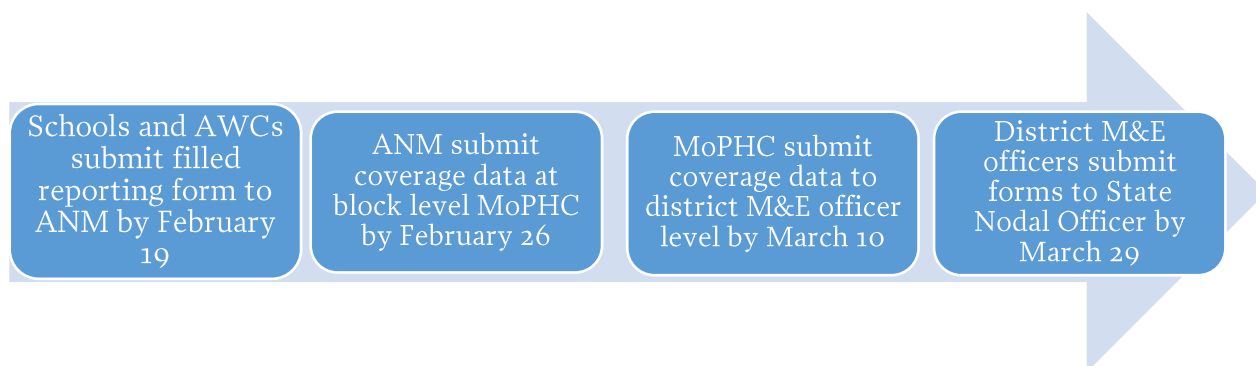
Understanding program reach and quality is a key component of a successful deworming intervention. In order to fulfill this need, Evidence Action worked intensively with the Government of Tripura to assess the quality of program planning and implementation with an ultimate focus on areas of improvement for successive deworming rounds. The preparedness of schools, AWCs and overall health systems to undertake deworming; adherence to the prescribed deworming processes; and ensuring accurate reporting of coverage, are key components of the deworming program. Three types of monitoring and evaluation are included in each deworming program round: (1) process monitoring, (2) coverage reporting, and (3) coverage validation.

Process Monitoring, Coverage Recording and Coverage Validation

Process Monitoring assessed the preparedness of the schools, *anganwadis*, and health systems to implement mass deworming and the extent to which they have followed correct processes to ensure a high quality deworming program. Evidence Action assessed the program preparedness during pre-deworming phase and selected independent monitors observed the deworming processes on deworming day and mop-up day. Process monitoring conducted in two ways: a) telephone monitoring and cross verification and b) physical verification by visiting schools and training venues.

Coverage Reporting assessed the estimated numbers of program beneficiaries, and is a crucial component to measure success. With close support from Evidence Action's state and field teams, the Department of Health collected and compiled the coverage report for NDD within the established reporting timelines. School teachers and AWWs had been trained on the recording and reporting protocols during their trainings. These protocols, along with the reporting cascade and timelines (refer to Figure A below), were also shared with all districts through the state's directives. In order to improve the accuracy of coverage reporting, every participating school and *anganwadi* was instructed to follow a recording protocol for deworming. Every teacher and AWW was required to put a single tick mark (✓) on deworming day or double-tick mark (✓✓) on mop-up day next to a child's name in the attendance register/*anganwadi* register if they were administered albendazole. Schools and *anganwadis* are responsible to compile the number of dewormed children from attendance registers of all classes, fill the reporting format, and submit it to the next level.

Figure A: Reporting cascade and timelines



Coverage Validation is an ex-post check of the accuracy of the reporting data and coverage estimates. Coverage validation data was gathered through interviews with headmasters and three students (in three different randomly selected classes) in each school, and by checking all class registers and reporting forms. These activities provided a framework to validate the coverage reported by the schools and calculated the level of inaccuracy in the reporting data by comparing the ticks with the numbers reported in school reporting forms.

Sampling and Sample Size

Through a competitive selection process, Evidence Action hired an experienced independent research agency, Centre for Media Studies (CMS), to implement monitoring across 38 blocks in eight districts of the state. A two-stage probability sampling procedure was adopted to select schools for process monitoring and schools and *anganwadis* for coverage validation (Table A). For process monitoring nearby *anganwadis* sampled and schools were selected. Process monitoring was carried out on two days: NDD (February 10, 2016) and mop-up day (February 15, 2016). On each day, 85 monitors targeted to visit 180 randomly selected government/government aided/private schools and 160 nearby *anganwadis* to observe deworming. Coverage validation was undertaken from February 29 - March 4, 2016 during which 85 monitors targeted to visit 270 randomly selected government/government aided schools/private schools, and 240 *anganwadis* to verify the reported coverage numbers.

Process information was collected to check for adequacy of drug supplies and awareness materials; assess whether teachers had received training; and check knowledge of adverse event management and reporting protocols. During coverage validation monitors collected information by interviewing school headmaster/teacher, AWWs, checking attendance registers and interviewing three children from each school.

Table A: Target and coverage of schools and *anganwadis* during independent monitoring

Indicators	Process monitoring		Coverage validation	
	Target	Achieved	Target	Achieved
Total number of districts	8	8	8	8
Total number of blocks	38	38	38	38
Total number of schools	180	180	270	270
Total number of government/government aided schools	160	160	240	240
Total number of private schools	20	20	30	30
Total number of <i>anganwadi</i> centers	160	160	240	240

Independent Monitoring Formats

To ensure comprehensive coverage, and triangulation of data, four formats were administered - one each for school and *anganwadi* for process monitoring on NDD and mop-up day, and one each for schools and *anganwadis* for coverage validation. Evidence Action designed and finalized formats in consultation with Department of Health, Government of Tripura. The formats were translated into the local regional language, checked to ensure that the language was concise and easily understandable. Using these four standard formats, monitors collected information on training, availability and use of IEC material, availability and submission of reporting forms and frequency and management of adverse events.

Authorization from Government

The surveys were conducted with prior approval of the state government. A permission letter was issued by Department of Health, Government of Tripura. Each monitor carried copies of the letters explaining the process of monitoring and coverage validation and requesting participation from school and *anganwadi* staff.

Training of Trainers and Independent Monitors

A two phase training program was organized at the state level. In the first phase, representatives from Evidence Action provided a one-day comprehensive training to master trainers of CMS in Agartala on February 6, 2016. These master trainers conducted two-day training for independent monitors during February 7-8, 2016 in three batches in the presence of Evidence Action representatives. A total 112 trainees, participated including buffer monitors and supervisors. The training included discussions on the deworming initiative, importance of independent monitoring, and monitoring formats. Afterward, all relevant formats were shared.

The training program consisted of instructions for interviewing techniques, detailed discussion on questionnaires, field procedures for conducting research and quality control. CMS team leader discussed over the key points of questionnaire. During the training program special attention was paid to missing information, sensitive questions, checks, and filter questions. On the second day, mock interviews were conducted and queries/issues of field monitors were addressed. After rigorous training, all trained 112 participants appeared in a written test and based on the scores, 90 monitors were selected for the field work and rest of them were kept as buffer. After selecting the monitors, particular schools and AWCs were assigned to them.

The coverage validation phase was delayed by around 10 days due to the Tribal Council elections in Tripura, therefore one-day refresher training for monitors was organized in Agartala, on February 27, 2016. CMS senior team members led the refresher training and discussed each question of coverage validation tool in detail.

Field Implementation

Each monitor was allotted two schools and two *anganwadis* for process monitoring. Subsequently, they were allotted three schools and three *anganwadis* to survey for coverage validation. Monitors were provided printed copy of monitoring formats, and albendazole tablets for demonstration. The details of sample schools were shared with them one day before fieldwork commenced to ensure that monitors did not inform local educational authorities ahead of their visit, thus potentially affecting compliance.

For process monitoring, monitors were instructed to visit schools first and then a nearby *anganwadi*. In most cases, however, schools administered albendazole tablets only after the mid-day meal, so monitors were instructed to revisit those schools around noon after collecting information from *anganwadis*. For coverage validation, however, the strategy was slightly modified; if a school was closed or non-traceable, monitors were asked to cover the next school on their list, and return to the first school at another time on a subsequent day. If the school was non-traceable or closed consistently after attempting three visits, a new school was substituted for the old one.

Quality Control

Appropriate quality control measures were taken to ensure data collected was accurate and comprehensive. Approximately 15% of the schools and *anganwadis* were contacted on phone the next day to confirm that they had participated in the monitoring and validation process. This ensured that the field visit actually took place. In addition to these calls, district coordinators also visited sampled schools to spot check the monitoring processes and schools and *anganwadis* were also contacted through tele-callers to verify monitoring visits. In all cases, school and *anganwadi* staff were asked to sign a participation form and provide an official stamp, ensuring that the school or *anganwadi* was actually visited. The

data synced to the tablet PC was vetted as and when it synced to ensure comprehensiveness of data, and errors were then subsequently addressed by follow up visits, or calls.

KEY FINDINGS

The key results are mentioned below; further details are presented in annexures.

Training

For effective implementation of NDD, teachers and AWWs are trained prior to the deworming day. Independent monitoring data demonstrated that teacher/ headmasters from 90% of the schools and 97% of the AWWs had received training for recent round of deworming². Amongst those who did not attend the training, majority of the school teachers (77%) and AWWs (25%) cited unawareness about the date/ timing of training as the main reason. (*Annexure 1 – Table 1*).

Nine out of the 20 private schools reported to have received training on deworming in the last two months. Among those who did not attend the training, unawareness about training date and time were the major reasons. Efficacy of training can be ascertained from the fact that 18 out of 20 private schools were aware of the ways a child can get worm infection, 17 of 20 were aware of the possible adverse events from deworming, and 10% were aware that having the child lie down in an open and shady place and giving ORS are the remedial measures to be taken in case of an adverse event.

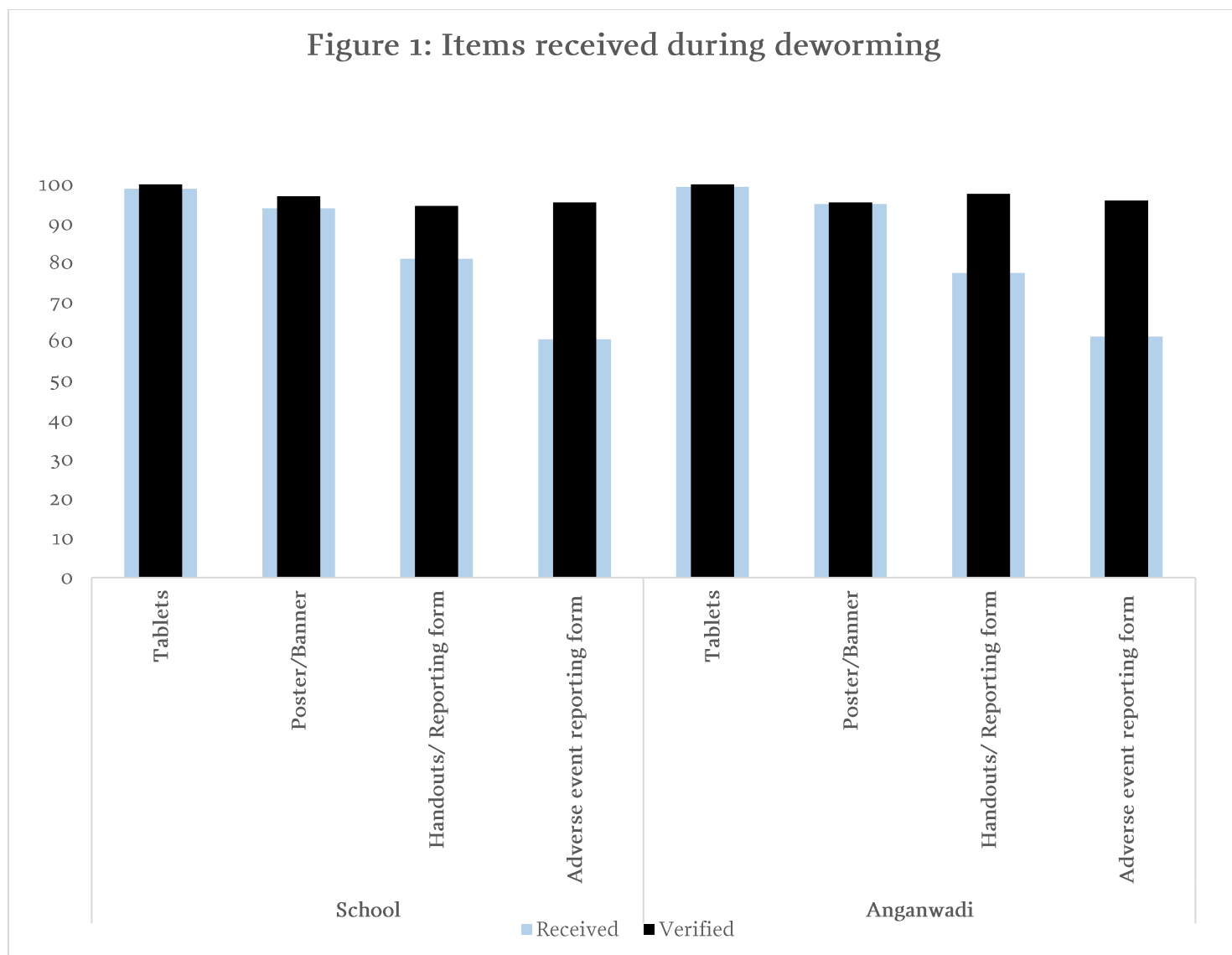
Approximately 54% of schools and 61% *anganwadis* reported that they did not receive an SMS about deworming (*Annexure 1 – Table 1*). Only seven of the 20 private schools reported to have received an SMS about deworming, confirming limited dissemination of information about the program.

Deworming Materials Including Drugs

Around 99% of schools and *anganwadis* received tablets for deworming program, (*Figure 1 & Annexure 1 – Table 2*). Moreover, 99% of schools and 92% of *anganwadis* reported to have received sufficient drugs for deworming (*Annexure 2 – Table 1*). 94% of schools and 95% of *anganwadis* received poster/banners. Further, 81% of schools and 76% of *anganwadis* received handouts/reporting forms and 67% of schools received adverse reporting form (*Figure 2 & Annexure 1 – Table 1*). 19 of the 20 private schools covered during process monitoring reported to receive tablets and 17 received banner/ poster for deworming. Moreover, ten of the private schools reported to receive handouts/reporting forms.

² Findings from both process monitoring and coverage validation were combined for this indicator.

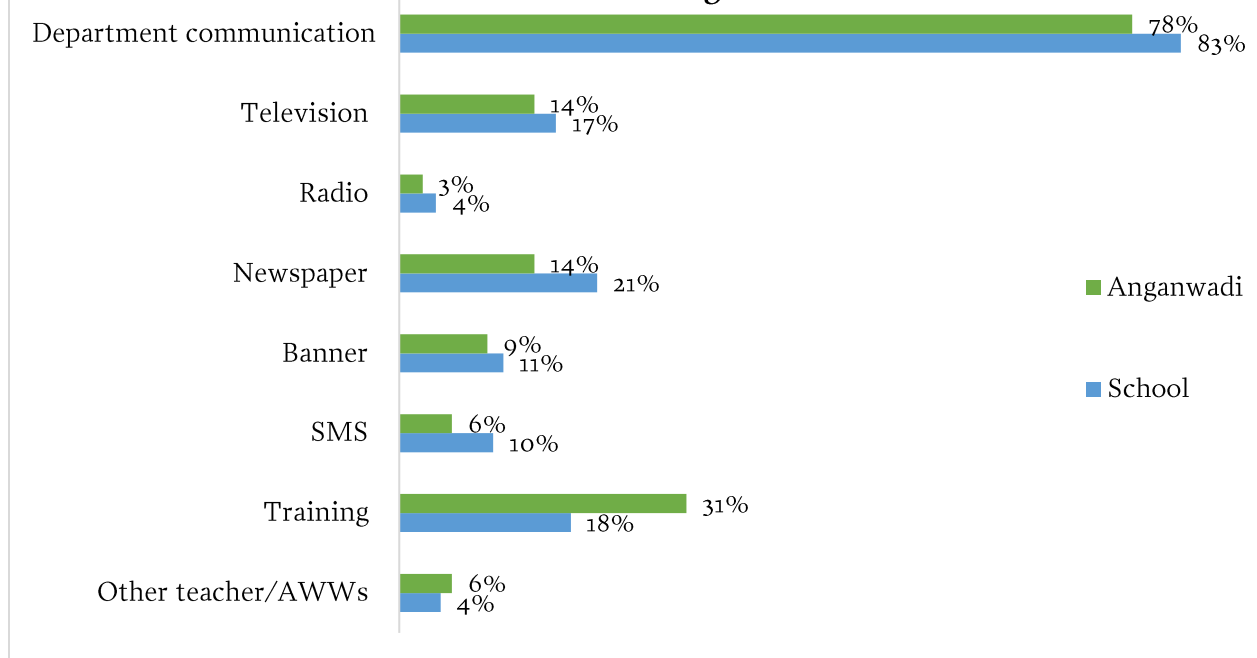
Figure 1: Items received during deworming



Source of Information about National Deworming Day

Departmental communication was the major source of information for the schools (83%) and *anganwadis* (78%) for deworming (**Figure 3**). This was followed by newspapers at 21% for schools and training at 31% for *anganwadis*. SMS and television were sources of information for approximately 10% and 17% for schools respectively (**Figure 2 & Annexure 1 – Table 1**). Departmental communication was also the primary source of information for 10 out of 20 private schools. Most children reported their primary source of information about deworming to be verbal instructions and explanation from their teacher (96%), followed by the television and banner/poster (17%), newspapers and parents/siblings (6%) (**Annexure 1 – Table 5**).

Figure 2: Source of information about recent round of deworming



Implementation of Deworming Program

Independent monitoring data demonstrated that around 99% of schools and 92% of *anganwadis* reported to conduct deworming on appropriate day; monitors observed deworming first-hand in 97% of schools and 100% of *anganwadis* (**Annexure 1 – Table 1 & 3**). Further, coverage validation findings show that 96% of schools and 100% of *anganwadis* dewormed children either on deworming day or on mop-up day (**& Annexure 2, 3 – Table 1**). Out of total enrolled children interviewed on deworming day and mop-up day, around 95% reported receiving a tablet. This helps confirm that deworming occurred in a large percentage of schools on one of the deworming days. (**Annexure 1 – Table 5**).

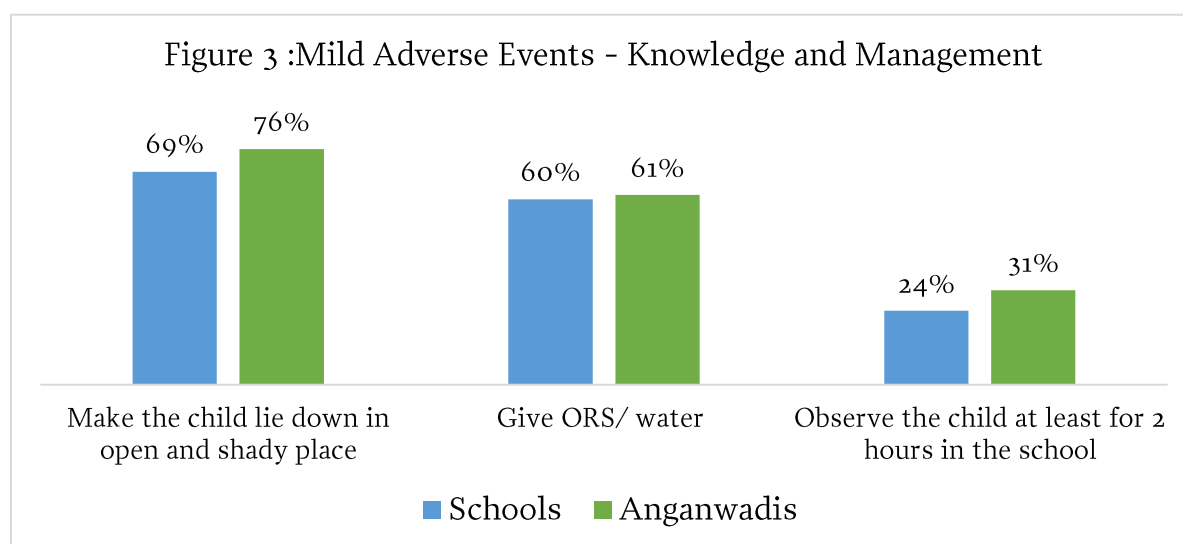
Monitors observed deworming in 19 out of 20 private schools on both NDD and mop-up day. One of the private schools district had a BSF camp and hence the school was not functioning.

Adverse Events - Knowledge and Management

Interviews with headmaster/ principal and senior teachers revealed substantial awareness regarding potential adverse events, and understanding of appropriate protocols to follow in case of such events. Around 93% of schools and 95% of AWWs asked children if they were sick before administering tablets, and 91% of schools and 98% of AWWs did not administer tablets to a sick child (**Annexure 1 – Table 3**). Abdominal pain was listed as a symptom by 78% of principals and 40% of AWWs followed by nausea (81% principals, 47% AWWs). Less than 50% of school staff and AWWs recognized fatigue as a symptom (**Annexure 1 – Table 1**). Further, 69% of school teachers and 76% of AWWs knew to have a child lie down

in an open, shady place in case of any symptoms and the majority of schools and *anganwadis* knew to give ORS/water and observe for two hours (*Figure 3*). Further, 94% of schools and 75% of *anganwadis* reported the need to call a PHC doctor if symptoms persisted (*Annexure 1 – Table 1*).

These findings suggest that schools and *anganwadis* had substantial awareness about the processes to be followed in case of any adverse event. Around 18% of the schools and 4% of *anganwadis* reported any case of adverse event in the survey. (*Annexure 1 – Table 3*). 17 out of 20 private schools were aware of the possible adverse events that could be reported by children after taking the tablet. Mild abdominal pain, vomiting and nausea were the highest reported symptoms. 11 of the private schools covered were aware that they should have a child lie down in open, shady place in case of any symptom of adverse reaction. Ten schools were also aware that they need to give ORS/water. Five out of 18 private schools reported any case of adverse event on NDD or mop up day.



Recording Protocol

Through coverage validation data (*Annexure 2, 3 – Table 2*) we can say that 64% of the schools (at least one class followed the correct reporting protocol) and 84% of the *anganwadis* followed correct recording protocol, whereas around in 36% percent of the schools none of the classes followed the reporting protocol (*Annexure 2 – Table 2*).

During training teachers/headmasters and AWWs were made aware to retain a copy of school/*anganwadi* reporting form, 89% of the headmasters and 82% AWWs interviewed during process monitoring were aware of this requirement (*Annexure 1 – Table 1*). During coverage validation, reporting form was available at 98% of both schools and *anganwadis*. Further as per the NDD guidelines, ASHAs were required to prepare the list of the children not attending school and *anganwadis* and submit it to AWWs to establish greater reach to

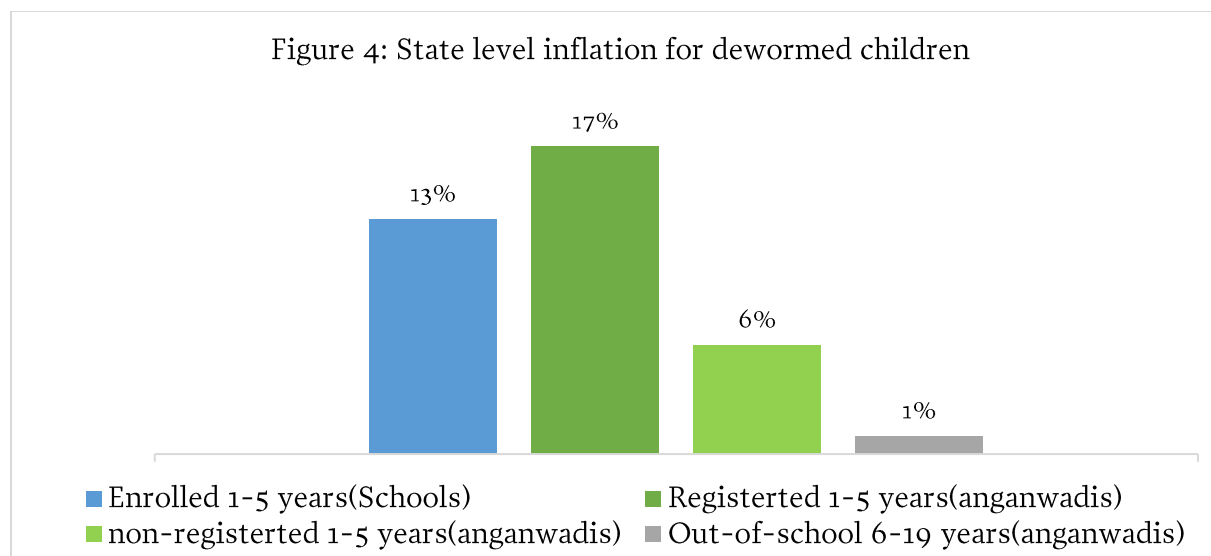
deworm these children at AWCs, however, findings suggest only 25% of *anganwadis* had a list of unregistered children (1-5 years) (**Annexure 2 – Table 3**). During coverage validation, reporting forms were available in around 98% of schools and *anganwadis*. Among these, 91% of schools and 95% of *anganwadis* had completely filled the reporting forms (**Annexure 2,3 – Table 2**).

Coverage Validation

In the schools and *anganwadis* sampled for coverage validation, we calculated the state-level verification factors, which are commonly calculated for Neglected Tropical Diseases including STH control programs around the world. State verification factor compares the aggregated number of ticks in school/*anganwadi* registers, in line with the established reporting protocol, to the deworming coverage reported by schools/*anganwadis* in the reporting forms submitted to the state.

A verification factor of 1 means the schools reported the exact same figures that they recorded on deworming day. A verification factor less than 1 indicates over-reporting, while a verification factor greater than 1 indicates under-reporting. The coverage verification factor was estimated on the basis of availability of a copy of reporting form at schools and *anganwadis*. As mentioned in the previous section, 98% of both schools and *anganwadis* had a copy of reporting form available. The state level verification factor for school enrolled children was found to be 0.88, indicating that for every 88 enrolled children who were recorded as deworming in the schools, the school reported that 100 enrolled children had been dewormed (**Annexure 2 – Table 2**). This corresponds to an overall 13% inflation of reporting in the state, meaning that reported numbers appear to be approximately 13% higher than the numbers recorded in attendance registers. Similarly, state level verification factor for *anganwadi* registered children was 0.85 with corresponding inflation of 17%. Further, the verification factor for non-registered (1-5 years) and out-of-school (6-19 years) children were 0.94 and 0.99 and the corresponding figures for both these category of children were inflated by six percentage points and one percentage point respectively (**Figure 4 & Annexure 2 – Table 4**).

Figure 4: State level inflation for dewormed children



Further, attempts were made to understand the maximum number of enrolled children that could have been dewormed. Coverage validation demonstrated that 96% of schools did deworming on either of the days and attendance data showed that 82% of the total school enrolled children were in attendance (*Annexure 2 – Table 2*). Moreover, 100% of children interviewed during coverage validation reported to have received a deworming tablet and consumed it under the supervised administration in schools (*Annexure 2 – Table 3*). Based on deworming implementation status and attendance of enrolled children on deworming and mop-up day and children’s interview, maximum 79% (100% children out of 82% present in 96% of schools conducted deworming) of children could have been dewormed in the state. This corresponds closely to the state’s reported coverage of 80% of children in government schools in the state

RECOMMENDATIONS

Since the program follows a fixed-day approach and engages multiple stakeholders, it is critical that all program components are aligned for successful program implementation and to prevent gaps and delays. Of particular importance are IEC, training, drug logistics, and adverse event management related preparedness. Following are the key recommendations for program improvements that emerged out of the monitoring and evaluation.

1. In coordination with all stakeholder departments, consensus on fixing target population will help to assess program coverage and expand reach to children not attending schools and *anganwadis*. This can be achieved through increased availability of ASHA-generated lists for unregistered and non-enrolled children.
2. Training is a critical component of the program. Findings about training attendance suggest that coverage can be improved in future rounds by ensuring that sessions are planned earlier and that greater emphasis is placed on communicating training dates.

Better attendance at trainings may also be used to capture contact details, improving the ability of the deworming program to reach out to the ultimate implementers of the program. Improving attendance at trainings will likely benefit the distribution cascade as well, since drugs and materials are intended to be distributed at the time of training.

3. As many headmasters and *anganwadi* workers did not receive deworming SMSs during NDD implementation, the contact database of stakeholder functionalities needs to be regularly updated to ensure comprehensive information dissemination to the relevant officials in a timely manner.
4. Despite well acknowledged need of integrated distribution of NDD kit in training, there was no integrated distribution on NDD kit in Tripura. Efforts are required to ensure integrated distribution of necessary IEC materials along with deworming tablets to all the schools and AWCs at Block level training. This requires efficient planning for the integrated training and distribution cascade to ensure that it works effectively.
5. As many schools and *anganwadi* centres did not have a list of out-of-school and unregistered children, efforts are required to engage ASHAs proactively to prepare these lists in their communities. ASHAs and AWWs can be an asset to the program in this regard since they conduct community meetings, mobilize children, and conduct other health education activities. Providing ASHAs with incentives, as approved by the national government, should help motivate them to conduct these activities for the deworming program

WAY FORWARD

Tripura observed the state's second round of NDD deworming in 2016. The program monitoring has provided useful insights for increasing coverage in future rounds of the program on wider scale. Aligned to the NDD operational guidelines, efforts will be coordinated to support government stakeholders more intensively in the initial phase, while drawing from experiences from this rounds in the state. As the program has achieved significant coverage for enrolled children in schools, moving forward the strategies will focus on increasing coverage of unregistered and out-of-school children, and reaching children in private schools. Efforts will be directed on encouraging schools and *anganwadis* to follow standard recording protocols for recording dewormed children to improve the accuracy of coverage data. With the high burden of STH in Tripura, sustaining the pace of the program will require continued advocacy. Efforts are required to promote program sustainability by ensuring committed resources for deworming under the state's Annual Program Implementation Plan.

ANNEXURE - 1

Table: 1 Interview with headmaster/headmistress/principal

Indicators	Schools (Total = 180)		Anganwadis (Total = 160)	
	Percentage	Number	Percentage	Number
Type of School				
Govt./Govt. Aided schools	88.9	160	NA	NA
Private Schools	11.1	20	NA	NA
Respondent of the section				
Headmaster/Principal	74.4	134	NA	NA
Vice principal	10.6	19	NA	NA
Nodal Teacher	6.7	12	NA	NA
Any other teacher	8.3	15	NA	NA
Category of school				
Primary(1 to 5)	45.0	81	NA	NA
Primary with upper primary(1 to 8)	24.3	44	NA	NA
Primary with upper primary and secondary(1 to 10)	7.2	13	NA	NA
Primary with upper primary secondary and higher secondary(1 to 12)	6.7	12	NA	NA
Upper primary only(6 to 8)	3.9	7	NA	NA
Upper primary with secondary and higher secondary(6 to 12)	5.0	9	NA	NA
upper primary with secondary(6 to 10)	6.7	12	NA	NA
Secondary with higher secondary(9 to 12)	0.6	1	NA	NA
Higher Secondary only or Jr. college(11 to 12)	0.6	1	NA	NA
Did any teacher/ <i>anganwadi</i> worker attend training in last 2 months	84.4	152	95	152
Did trained teacher provide training to other teachers¹(N=152)				
Yes, trained all other teachers	86.8	132	NA	NA
Yes, trained some other teachers	6.6	10	NA	NA
No, did not train other teachers	5.3	8	NA	NA
Don't know /don't remember	1.3	2	NA	NA
Reason for not attending official training School (N=26), Anganwadi (N=8)				
Did not know the date/timings	76.9	20	25.0	2
Busy in other official work	15.4	4	0.0	0

Indicators	Schools (Total = 180)		Anganwadis (Total = 160)	
	Percentage	Number	Percentage	Number
Attended Deworming training in the past	0.0	0	12.5	1
Not Necessary	7.7	2	12.5	1
Others	0	0	50.0	4
Source of information about recent round of Deworming program				
Departmental communication	83.3	150	78.1	125
Television	16.7	30	14.4	23
Radio	3.9	7	2.5	4
Newspaper	21.1	38	14.4	23
Banner	11.1	20	9.4	15
SMS	10.0	18	5.6	9
Training	18.3	33	30.6	49
Government Officials/Workers	4.4	8	5.6	9
Other	1.6	3	2.7	5
Source of information about Deworming tablets distribution				
Departmental meeting	NA	NA	94.4	151
Other <i>Anganwadis</i>	NA	NA	5.6	9
Awareness about the ways a child can get worm infection	97.8	176	98.1	157
Different ways that children can get worm infected (School (N=176), Anganwadi (N=160))				
Having foods without washing hands	90.9	160	88.1	141
Not washing hands after using toilets	77.8	137	85.6	137
Not using sanitary latrine	70.5	124	60.0	96
Moving in bare feet	69.9	123	70.6	113
Consume vegetables and fruits without washing	51.7	91	48.8	78
Having long and dirty nails	39.8	70	46.2	74
Others	1.1	2	0.0	0
Any way a child can get worm infection	97.2	175	98.1	157
Awareness about all the ways a child can get worm infection	16.1	29	22.5	36
Receive SMS about the Deworming program	46.1	83	38.1	61
Preference to receive the SMS				
Morning	21.7	39	18.1	29

Indicators	Schools (Total = 180)		Anganwadis (Total = 160)	
	Percentage	Number	Percentage	Number
Afternoon	13.3	24	12.5	20
Evening	16.1	29	18.1	29
Any time	40.6	73	42.5	68
Do not prefer the SMS	10.0	18	8.8	14
Visibility over the Deworming Day Poster/Banner is posted (School N= 168; Anganwadi N = 152)				
Clearly posted/ visible to all	89.9	151	85.5	130
Hidden in a room/partially visible.	4.2	7	5.9	9
Not posted/ not visible	6.0	10	8.6	13
Availability of reporting form	NA	NA	88.8	142
Has the ASHA submitted you a list of preschool non registered Children (1-5 years) in your community	NA	NA	38.8	62
Has the ASHA submitted you a list of Out-Of-school Children(6-19 years) in your community	NA	NA	41.2	66
Are non-registered (1-5 years) children also getting deworming tablets in your <i>anganwadi</i> today	NA	NA	36.9	59
Are Out-Of-school Children(6-19 years)children also getting deworming tablets in your <i>anganwadi</i> today	NA	NA	42.5	68
Prescribed dose of 2-5 years of children	NA	NA	89.4	143
Prescribed dose of 6-19years of children	NA	NA	96.2	154
Prescribed dose of 1-2 years of children	NA	NA	96.2	154
Awareness about to whom to submit the completed School/ <i>anganwadi</i> reporting form	48.3	87	63.1	101
Retain a copy of the School/ <i>anganwadi</i> Reporting Form at the school after submitting one copy	88.9	160	81.9	131
Teachers/ <i>anganwadi</i> who think any adverse event can occur after taking the Deworming tablets	78.3	141	84.4	135
Possible adverse events could be reported by children after taking the				

Indicators	Schools (Total = 180)		Anganwadis (Total = 160)	
	Percentage	Number	Percentage	Number
tablets (School N=141; Angnawadi N = 135)				
Mild abdominal pain	78.0	110	40.0	54
Nausea	80.9	114	50.4	68
Vomiting	63.1	89	46.7	62
Diarrhea	46.1	65	30.4	41
Fatigue	35.5	50	9.6	13
Any possible adverse event	76.7	138	87.4	118
All possible adverse event	14.4	26	3.0	4
Response in case a child complains of mild stomach ache, nausea, vomiting, and diarrhea after taking the tablets				
Make the child lie down in open and shady place	68.9	124	76.2	122
Give ORS/ water	60.0	108	61.4	99
Observe the child at least for 2 hours in the school	23.9	43	30.6	49
Don't Know /don't remember	8.9	16	3.8	6
Others	7.7	14	8.7	14
Response in case the child continues to report symptoms of stomach ache, vomiting, diarrhea, etc. even after a few hours				
Call PHC or emergency number	94.4	170	75.0	120
Take the child to the hospital /call doctor to school	3.3	6	45.6	73
Don't know / don't remember	2.8	5	2.5	4
Deworming activity going in your school/anganwadi today				
Yes, getting now	93.3	168	91.9	147
Yes, after few hours	5.6	10	0	0
No, will not administer today	1.1	2	8.1	13

Table-2: Distribution of IEC material

Items Received in training	Schools		Anganwadis	
	Received	Verified	Received	Verified

Tablets	98.9	100.0	99.4	100.0
Poster/Banner	93.9	97.0	95.0	95.4
Handouts/ Reporting form	81.1	94.5	77.5	97.6
Adverse event reporting form	60.6	95.4	61.3	95.9

Table-3: Observation of deworming activity in the class/*anganwadi*

Indicators	Schools		<i>Anganwadis</i>	
	Percentage	Number	Percentage	Number
Deworming activity is taking place in the class/ <i>Anganwadi</i> (School N=180; <i>Anganwadi</i> N = 160)	97.2	175	100.0	160
Teachers/ <i>anganwadi</i> worker giving any health education related to Deworming(School N = 175; <i>Anganwadi</i> N = 160)	81.7	143	79.4	127
What are being included by the teacher/ <i>anganwadi</i> worker as a part of health education to children(School N = 143); <i>Anganwadi</i> N = 127)				
Harmful effects of worms	77.6	111	69.3	88
How worms get transmitted	75.5	108	71.7	91
Benefits of Deworming	53.1	76	53.5	68
Methods of worm infection prevention	28.0	40	45.7	58
Clean drinking water and glasses (<i>Anganwadi</i> N = 160)	NA	NA	57.5	92
Teacher/ <i>anganwadi</i> worker were asking the children if they are sick/under medication before giving the tablet (School N = 175; <i>Anganwadi</i> N = 160)	92.6	162	95.0	152
What teacher/ <i>anganwadi</i> worker did ,If there was any sick child in the class room(School N = 162; <i>Anganwadi</i> N = 152)				
Gave Albendazole tablet to the child	8.6	14	2.0	3
Did not give the Albendazole tablet to the child	91.4	148	98.0	149

Indicators	Schools		Anganwadis	
	Percentage	Number	Percentage	Number
Students/children are told to chew the tablet before swallowing it School N=175) ;(Anganwadi N= 160)	92.6	162	81.2	130
AWW given half teaspoon syrup to children of 1 to 2 years age (Anganwadi N= 160)	NA	NA	81.2	130
Deworming tablets were distributed by (School N = 175; Anganwadi N= 160)				
Teacher/headmaster	98.3	172	NA	NA
Anganwadi worker	NA	NA	93.1	149
Asha/ANM	1.1	2	5.6	9
Students	0.6	1	0	0
Others	0	0	1.2	2
Teacher/ anganwadi worker asking students to take Albendazole tablets in the class/ anganwadi only (School N = 175; Anganwadi N= 160)	94.9	166	92.5	148
Teachers/ anganwadi worker following the protocol of putting single tick ✓(Deworming day) or double tick ✓✓ (mop-up day) on each child's name/roll no. in the attendance register after giving them the Deworming tablet	80.6	141	76.2	122
Practice followed by teacher ,if the ticking/double ticking Protocol did not followed only (School N = 34; Anganwadi N= 38)				
Prepare the separate list for dewormed child	50.0	17	63.2	24
Put different symbols	29.4	10	7.9	3
Nothing was done	17.6	6	28.9	11
Any child not given the prescribed dose of Albendazole tablet (School N = 175; Anganwadi N= 160)				
Yes, less than the prescribed doze	10.3	18	9.4	15
Yes ,more than the prescribed doze	6.9	12	5.0	8
No, the prescribed doze is being given	82.9	145	85.6	137
Any adverse event observed (nausea, vomiting, stomach-pain	17.7	31	4.4	7

Indicators	Schools		Anganwadis	
	Percentage	Number	Percentage	Number
Diarrhoea, etc.) after taking the tablet(School N = 175; Anganwadi N= 160)				
Is there a single tick (deworming day) in front of the children present on that day Anganwadi N= 80)				
Yes to every children	NA	NA	47.5	38
Yes, but in few children	NA	NA	33.8	27
No	NA	NA	18.8	15
Are there names which do not have a single tick on deworming day AND they also do not have a double tick on mop-up day. (Anganwadi N= 80)	NA	NA	56.2	45
Reason of not putting single tick or double tick in front of the name of all/some children(Anganadis N= 45)				
They did not get deworming drugs as they were feeling unwell	NA	NA	6.7	3
AWW did not follow the recording protocol correctly	NA	NA	6.7	3
The parents of those children have refused to get their children dewormed	NA	NA	8.9	4
Children refused to take the drug	NA	NA	2.2	1
Others	NA	NA	2.2	1

Table-4: Interview with teacher

Indicators	Percentage	Number
Attended any official training for Deworming program in the past 2 months	77.2	139
Received training for Deworming (N=139)		
At official level training	66.2	92
By Headmaster/ teacher	33.8	47
Awareness about the ways a child can get worm infection (N=180)	93.9	169

Different ways that children can get worm infected (N=169)		
Having foods without washing hands	92.9	157
Not washing hands after using toilets	83.4	141
Not using sanitary latrine	62.1	105
Moving in bare feet	65.1	110
Consume vegetables and fruits without washing	53.8	91
Having long and dirty nails	52.7	89
Any way a child can get worm infection	93.3	68
Awareness about all the ways a child can get worm infection	21.7	39
If a child is unwell, albendazole can't be given(N=180)	5.6	10
Awareness about prescribed dose of albendazole(N=180)		
One	98.3	177
More than one	1.7	3
Teachers who think any adverse event can occur after taking the Deworming tablets(N=180)	67.2	121
Possible adverse events could be reported by children after taking the tablets(N=121)		
Mild abdominal pain	77.7	94
Nausea	80.2	97
Vomiting	67.8	82
Diarrhea	43.0	52
Fatigue	41.3	50
Any adverse event	66.1	119
All possible adverse event	14.4	26
In case a child complains of mild stomach ache ,nausea, vomiting, and diarrhea after taking the tablets, Your response should be (N=180)		
Make the child lie down in open and shady place	74.4	134
Give ORS/ water	66.7	120
Observe the child at least for 2 hours in the school	22.2	40
Don't know / don't remember	1.7	3
Others	7.7	14
If the child continues to report symptoms of stomach ache, vomiting, diarrhea, etc. even after a few hours, Your response should be(N=180)		
Call PHC or emergency number	78.9	142
Take the child to the hospital /call doctor to school	41.1	74
Don't know / don't remember	1.7	3
Other, specify	2.2	4

Table-5: Interview with Child

Indicators	Percentage	Number
Single tick ✓ in front of the name of children present on Deworming day(N=90)		
Yes to every children	65.6	59
Yes, but in few children	17.8	16
No	16.7	15
There were names which do not have a single tick ✓ on Deworming Day and they also do not have a double tick ✓✓ on Mop-up Day(N=90)	61.1	55
Reason to not putting single tick ✓ on Deworming day or double tick ✓✓ on mop-up day in front of the name of all/some children(N=86)		
They did not get Deworming drugs as they were feeling unwell	59.3	51
Teacher did not follow the recording protocol correctly	30.2	26
Children refused to take the drug	2.3	2
Other	8.1	7
Child got a white tablet in school today(N=178)	94.9	169
Child was feeling sick before taking the tablet in the school today (N= 169)	8.3	14
Child got tablet (N= 169)		
By Teacher / headmaster	98.8	167
ASHA/ANM	0.6	1
By Other student	0.6	1
Child consume tablet	94.7	160
Reason to not consume tablet(N=9)		
Was feeling sick	2	22.2
I am afraid of taking the tablet	2	22.2
Taking home	5	55.6
Awareness of child that, how to consume the tablet(N= 169)		
Chewed tablet before swallowing	94.1	159
Swallowed tablet directly	5.9	10
Awareness of child that, why tablet is provided(N=169)		
Deworming	93.5	158
Any other answer(unrelated to Deworming)	1.8	3

Indicators	Percentage	Number
Don't know /don't remember	4.7	8
Child was aware about Deworming activity (N= 11)	45.5	5
Source of information about Deworming activity(N=163)		
Teacher / school	96.3	157
Television	14.1	23
Radio	2.5	4
Newspaper	6.1	10
Poster/Banner	14.7	24
Parents / siblings	6.7	11
Friends/Neighbour	2.5	4

ANNEXURE - 2

Table-1 School/Anganwadi Coverage Validation Indicators

Indicators	Schools		Anganwadis	
	%	Number	%	Number
Responses from the headmasters/principals interviewed:	100	270	100%	240
Attended training for Deworming program	93	251	98.8	237
For schools that didn't attend training, reasons were				
Location of training was far away	37.5	6	33.3	1
Was not aware of the date/ timing of training	43.8	7	66.7	2
Busy in other official work	18.8	3	0	0
Attended Deworming training in the past	6.2	1	0	0
Schools received the followings				
Tablets	95.9	259	100	240
Poster	95.9	259	97.9	235
Hand-outs/Reporting form	94.1	254	98.8	237
Adverse Reporting form	65.9	178	65.8	158
Received SMS about Deworming program	45.2	122	45.4	109
Schools had the sufficient drugs for Deworming	98.5	255	92.1	221
Schools had surplus storage of drugs after Deworming	83.1	212	63.3	152
Schools where copy of school reporting form was available after Deworming Day and Mop-Up Day	97.7	253	97.5	234
For schools that didn't have copy of school reporting form, reasons were				
Did not receive	83.3	5	50	3
Submitted to ANM	16.7	1	50	3
Schools had complete school reporting form	90.9	230	94.9	222
Schools observed Deworming on Deworming Day or Mop-Up Day	95.9	259	100	240
Schools reported severe adverse event after taking the medicine	0.8	2	0.4	1
Average number of adverse events reported per school	1.5	3	1	1
Anganwadi having list of non-registered children (1-5 years)	NA	NA	25.8	62

<i>Anganwadi</i> having list of out-of-school children (6-19 years)	NA	NA	28.8	69
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Table-2: School Coverage Validation Indicators

Indicators
Schools where all the classes followed the correct recording protocol= 63.7%
Schools where one or more of the classes followed the correct recording protocol= 63.7%
Schools where none of the classes followed the correct reporting protocol= 36.2%
Schools where one or more of the classes followed other recording protocol= 19.6%
Schools where no reporting protocol was followed= 16.6%
State level verification factor= 0.883
State inflation rate (which measures the extent to which the recording in school reporting forms exceeds records at schools)= 13.1%
State level inflation rate among trained schools (which measures how much the coverage reported in reporting forms exceeded school records in registers for schools that received training)= 14.6%
State level inflation rate among untrained schools (which measures how much coverage reported in reporting forms exceeded school records in registers for schools that were not trained)= -6.6%
School level inflation rate for schools that followed the correct recording protocol (measures how much coverage reported in reporting forms exceeded school records in registers, for schools that were following recording protocols, i.e., ticking).= -0.24%
Attendance on Deworming Day = 69.7%
Attendance on Mop-up day= 63.5%
Children who attended on both Deworming Day and Mop-up day= 51.1%
Maximum attendance of children on Deworming Day and Mop-Up Day according to the CV data=82.1%

Table-3: Interview of school children on Coverage validation

Indicators
Children received Deworming tablets = 100%
Children aware about the Deworming tablets = 97.7%
Children who consumed tablets in front of teacher/headmaster = 99.2%
Children consumed tablet = 100%
Way children consumed the tablet = 91.9%

Table-4: *Anganwadi* Coverage Validation Indicators

Indicators
<i>Anganwadi</i> where all the followed the correct recording protocol= 83.7%
State level verification factor for Registered children(1-5 years)=0.854
State level verification factor for non- registered children(1-5 years)= 0.947
State inflation rate (1-5 years) = 16.9% (which measures the extent to which the recording in school reporting forms exceeds records at schools)
State inflation rate for non- registered children (1-5 years) = 5.5%
State level verification factor for out-of-school children(6-19 years)= 0.991
State inflation rate for out-of-school children(6-19 years)=0.8%