



Independent Monitoring of
National Deworming Day in Rajasthan
February 10, 2017

REPORT
September 2017

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EXECUTIVE SUMMARY

In India an estimated 220 million¹ children or one quarter of the global burden are living with STH infection. In February 2015, the Government of India launched National Deworming Day (NDD) to deworm all children between 1-19 years. The program aims to deworm all at-risk children through the supervised administration of albendazole tablets to all children aged 1-19 at *anganwadis* (preschools) and schools, including unregistered and out-of-school children.

Rajasthan observed the round of NDD in all 33 districts on February 10, 2017 followed by Mop-Up Day on February 15, 2017. Evidence Action's Deworm the World Initiative, as the technical assistance partner to the state government, engaged an independent research agency to conduct process monitoring on NDD and Mop-Up Day to assess the preparedness of *anganwadis* and schools to implement NDD program and to perform coverage validation post NDD to evaluate the accuracy of the reporting data and coverage estimates.

Findings from process monitoring highlighted that 86% of schools and 94% of *anganwadis* observed deworming either on NDD or Mop-Up Day. Nearly all schools and *anganwadis* received sufficient tablets. While over 80% of schools and *anganwadis* attended training for the current NDD round, integrated distribution of NDD kits² occurred for 74% of schools and 56% of *anganwadis*. This indicates that a low proportion of *anganwadis* received all NDD materials in trainings compared to schools. Coverage validation data revealed that low adherence to correct protocols for recording the number of children dewormed. A substantial proportion of *anganwadi* workers did not have a list of unregistered and out-of-school children. In the interviews conducted, 97% or nearly all of enrolled children reported they received an albendazole tablet.

The independent monitoring of NDD highlights opportunities to strengthen and improve program quality and coverage of the program by ensuring timely communication of training dates to schools and *anganwadis*. Other opportunities include updating the contact database of functionaries across stakeholder departments to facilitate timely information dissemination on the program; strengthening the integrated distribution of NDD kits and enhancing the engagement of ASHAs and private schools.

¹ Soil transmitted helminths, Number of children (Pre-SAC and SAC) requiring Preventive Chemotherapy for Soil transmitted helminths, WHO (2014)
http://apps.who.int/neglected_diseases/ntddata/sth/sth.html

² Integrated distribution of NDD kits including albendazole, banner/poster and handout-reporting forms provided to schools and AWC during the trainings at block or PHC level.

1. MONITORING AND EVALUATION

Understanding program reach and quality is a key component for determining if a NDD round was successful. Evidence Action worked intensively with the Government of Rajasthan's Departments of Health, Education, and Women and Child Development to assess the quality of program planning and implementation with the objective of identifying gaps and developing recommendations for improvements in future NDD rounds. Evidence Action conducted process monitoring to understand government implementers' preparedness for NDD and their adherence to the program's prescribed processes. After NDD, we conducted coverage validation to verify government-reported treatment figures.

1.1 Process Monitoring and Coverage Validation

Process monitoring assesses the preparedness of schools, *anganwadis*, and health systems to implement NDD and the extent to which they have followed recommended processes to ensure a high-quality program. Evidence Action assessed program preparedness during the pre- NDD phase and retained independent monitors to observe the processes on NDD and Mop-Up Day. Evidence Action conducted process monitoring in two ways: a) telephone monitoring and b) physical verification by visiting schools/*anganwadis* and training venues.

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 *anganwadi* workers and three students (in three different randomly selected classes) in each sampled school, and by checking all registers and reporting forms in *anganwadis* and schools. These activities provided a framework to validate coverage reported by schools and *anganwadis* and to calculate the level of inaccuracy in reported data by comparing the recounted numbers.

1.2 Recording and Reporting Process

Recording and reporting processes are an important means to assess the estimated number of program beneficiaries. The functionary trainings included sessions on reporting protocols, cascades, and timelines (refer to **Figures A and B** below), and were shared with districts through state directives. For recording deworming at schools and *anganwadi*, a single tick mark (✓) was required to be put next to a child's name in the attendance register if they were dewormed on NDD, and a double-tick mark (✓✓) if dewormed on Mop-Up Day. Headmasters and *anganwadi* workers compiled the number of dewormed children from attendance registers, filled out the summary reporting format, and submitted it to the next level.

The coverage reporting for NDD was done using the NDD mobile/web application. The Government of India provided the state with 249 user IDs and passwords to all blocks and districts for entering data in the NDD app and webpage. The designated nodal government official at the block level then used the NDD application to approve NDD coverage data entered in the application by block level officials. The NDD App IDs were created as per blocks of the

health department (249) and the education department (302), which created challenges for block officials to determine which blocks each list of schools covered. The reporting cascade of the state was followed, but there was deviation in reporting by the secondary education department (at the block level) to the elementary education department. We observed that in many cases BCMHOs (block health officials) had to coordinate with nodal principals of the Department of Secondary Education to obtain reports from secondary and senior secondary schools. However, directions dictated nodal principals of the secondary education department were expected to submit their reports to Block Resource Persons (BRP) of the elementary education department and then BRP would then submit the compiled report to BCMHOs for reporting in the NDD App. Aligning the state reporting cascade with the NDD guidelines and ensuring reports are transferred through the health department was part the recommendation of the Data Quality Assessment (DQA) exercise conducted prior to the February 2017 NDD round. However, the cascade was not fully followed by the state.

A lack of coordination between the Department of Education, the Department of Health, and different blocks was observed. This resulted in the delay of block level reporting. Further, due to blocks not reporting targets as stated in the joint directives, there were delayed approvals at the district level.

As per the coverage report 1.8 million children were dewormed against a target of 2.2 million. While reporting coverage, the state revised its target from 2.1 million to 2.2 million post-NDD based on the data received from the districts. The districts changed the targets in all categories with an increased target of 409,097 out-of-school children and 236,901 unregistered children. The nodal officer from the Department of Health instructed the districts to use the targets as mentioned in the joint directives or as reported by the blocks; whichever was higher. Moving forward, it is imperative for the state to set targets that are equal to the census population and that will allow clear understanding of the actual coverage in the target population.

Figure A: ICDS Reporting Cascade and Timelines

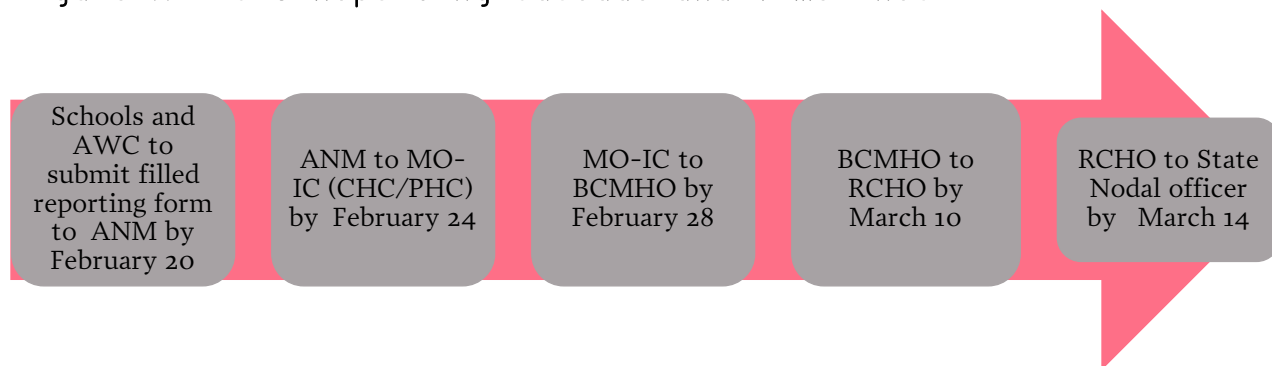
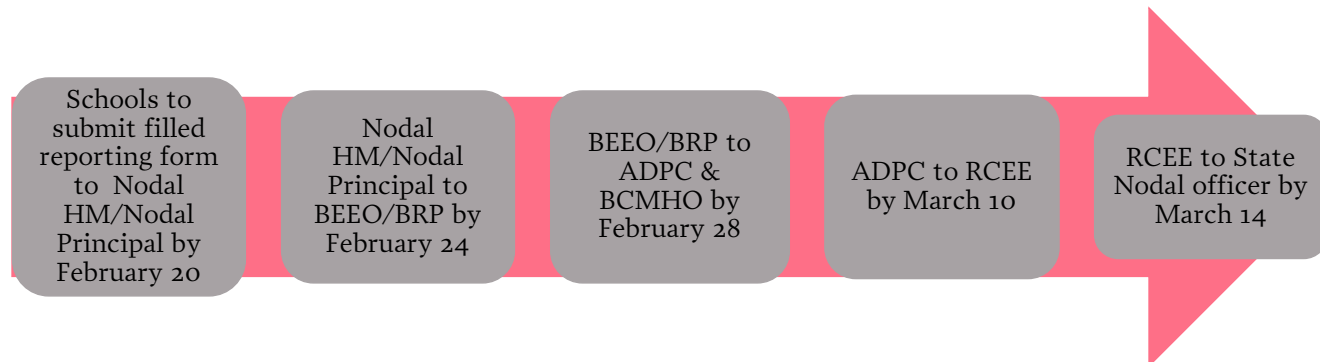


Figure B: Department of Education Reporting Cascade and Timelines



1.3 Sampling and Sample Size

Evidence Action facilitated independent monitoring in all 33 implementing districts. Through a competitive process, Evidence Action hired the State Institute of Health and Family Welfare (SIHFW), Jaipur, an apex level autonomous training and research organization in the health sector that provided 125 monitors. SIHFW implemented independent monitoring in Rajasthan during the February 2016 NDD round. A two-stage probability sampling procedure was adopted to select schools and *anganwadis* for independent monitoring (**Table A**). A total of 250 schools and 250 *anganwadis* were covered during process monitoring on NDD and Mop-up Day and 625 schools and 625 *anganwadis* during coverage validation.

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	33	33	33	33
Total number of blocks	125	125	125	125
Total number of schools	250	250	625	625
Total no. of children interviewed in schools	NA	NA	1875	1780
Total number of <i>anganwadis</i>	250	250	625	625

1.4 Independent Monitoring Formats

To ensure comprehensive coverage and triangulation of data, three formats were administered: one combined tool for process monitoring at schools and *anganwadi* on NDD and Mop-Up Day, and one each for schools and *anganwadis* for coverage validation. Evidence Action designed and finalized formats with approvals from Rajasthan’s Department of Health. The formats were translated into the regional language, checked to ensure that the language was concise and easy to understand, and loaded onto tablet computers.

1.5 Authorization from the Government

Evidence Action conducted independent monitoring with approval from the state government. Once the state government requested participation from each school, the monitors carried a copy of the authorization letter to the schools and *anganwadis* and explained the process of monitoring and coverage validation to a school headmaster or teacher or *anganwadi* worker, while requesting their participation.

1.6 Training of Trainers and Independent Monitors

A two-phase training program was organized with Evidence Action to provide a one-day comprehensive training to master trainers of the State Institute of Health and Family Welfare in New Delhi on February 3, 2017, followed by the master trainers further conducting a two-day training of 125 monitors (including buffer monitors) during February 7-8, 2017. The training included a brief orientation on NDD, the importance of independent monitoring, and details of the monitoring formats including computer-assisted personal interviews (CAPI) practices and practical sessions. At the end of the training, all participants were tested on their comprehension and ability to work in the field in order to qualify to participate.

1.7 Field Implementation

Each monitor was allotted one school and one *anganwadi* for process monitoring on NDD and Mop-Up Day to collect information on the availability of drugs, IEC materials, and further observations. Subsequently, each monitor was allotted five schools and five *anganwadis* for coverage validation. Monitors received a tablet computer, charger, printed copy of monitoring formats, and albendazole tablets for demonstration during data collection. The details of sample schools were shared with monitors one day before fieldwork commenced to ensure that monitors did not contact schools and *anganwadis* in advance. If a school or *anganwadi* was closed or non-traceable during process monitoring, it was replaced by another nearby site. During coverage validation, if a school was closed, monitors covered the next school on their list, and returned 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. In the absence of reporting forms, the calculation of the verification factor is restricted to the sample where the copy was found for verification.

1.8 Data Processing and Analysis

The survey agency provided data to Evidence Action in the agreed upon electronic format. Evidence Action reviewed all the data sets during pre-defined checkpoints, shared the feedback to the agency for any inconsistencies observed, and once again reviewed the data sets after the survey agency addressed any inconsistencies. All the analysis was performed using Stata version 13/14 and Microsoft Excel 2013.

1.9 Quality Control

Appropriate quality control measures were taken to ensure data collected was accurate and comprehensive. Evidence Action representatives from the Delhi and state teams contacted selected schools and *anganwadis* over the phone to confirm monitors visited sampled schools and *anganwadis*. Further, Evidence Action staff also visited select schools and *anganwadis* to spot and cross check the monitoring processes and to verify monitoring visits. In all cases, school and *anganwadi* staff were asked to sign a participation form with an official stamp to verify that the school or *anganwadi* was visited. Further, monitors verified photographs of schools and *anganwadis* collected during IM data collection and built in to the CAPI for process monitoring and coverage validation to prove the location of the interview.

2. KEY FINDINGS

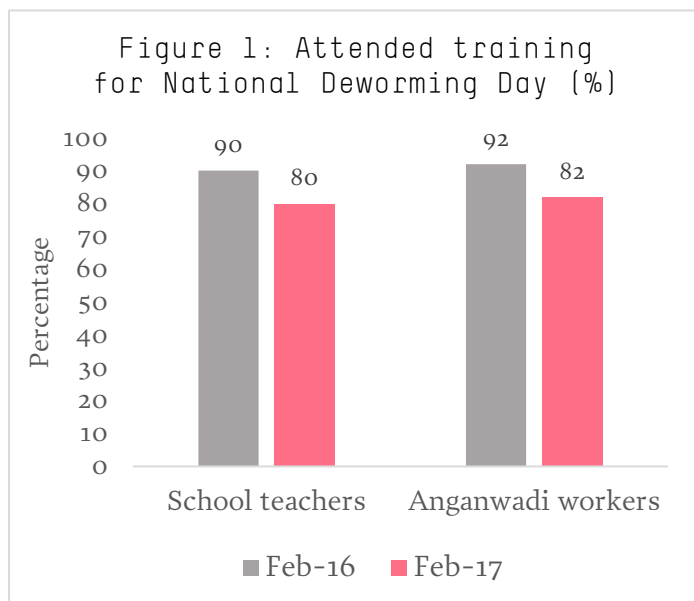
Key results³ and comparisons with the prior round from independent monitoring are below, with further details shared in annexures.

2.1 Training

For effective implementation of the program, teachers and *anganwadi* workers are trained prior to the NDD round to account for teacher/*anganwadi* worker turnover, and ensure an integrated distribution of drugs and IEC (posters/banners) materials during training sessions. Independent monitoring data shows that 80% of school teachers and 82% of *anganwadi* workers attended training for the February 2017 NDD round (**Figure 1**). Although all school teachers and *anganwadi* workers are expected to attend training for each round (regardless of training attendance in previous rounds), data shows that headmaster/teacher and *anganwadi* worker training attendance declined by 10 percentage points from the February 2016 to the February 2017 NDD round. This decline could be attributed to less involvement by district officials in trainings and training related instructions. The decline in the percentage of training attendance for both schools and *anganwadis* could also be attributed to the percentage of teachers/headmasters (22%) and *anganwadi* workers (30%) reporting that they had already attended NDD training in the past rounds. In many cases, scheduled NDD training dates were not followed and this led to confusion among training participants. Only 67% of trained teachers provided training to other teachers in their school. To ensure improved training quality and the success of the program, trained teachers should impart further training to other teachers in their schools.

³ The process monitoring and coverage validation data are based on sampled schools and *anganwadis*. Therefore, sampling weights are developed for each data set except process monitoring in *anganwadis* using selection probabilities. The sampling weights are further normalized at the state-level to obtain standard state weights. All analysis tables are based on the weighted sample except *anganwadis* findings from process monitoring.

The lack of information about the date and location of NDD trainings impacted the training attendance of teachers/headmasters and *anganwadi* workers as well. Approximately 29% of schools and 18% of *anganwadis* reported that they did not receive an SMS about deworming (**Table PM1**). The lack of an updated contact database may have impacted the overall delivery of SMSs to teachers and *anganwadi* workers.



Additionally, only 62% of private schools reported having received NDD training. Lack of information about training dates and times was the main reason for the majority of private schools (57%) not attending the training (**Table PM6**). Private schools require further engagement through ensuring information on training dates and locations is accurately communicated and encouraging private school participation.

2.2 Integrated Distribution⁴ of NDD Materials Including Drugs

The NDD guidelines mandate integrated distribution for all IEC and training materials along with deworming tablets to schools and *anganwadi* centers at block level trainings in the form of a NDD kit⁵ to ensure the timely and cost effective delivery of materials. Despite the well-defined distribution cascade plan for integrating complete NDD kits, findings showed that 74% of schools and 56% of *anganwadis* had an integrated distribution of materials. This indicates that in a large number of schools and *anganwadis* drugs and IEC materials were distributed separately from training (**Table PM3**). The difference in integrated distribution between schools and *anganwadis* could be partly attributed to differences in how training cascades were followed by schools and *anganwadis*. Per the NDD guidelines, trainings should be conducted at the block level. However, in the preparation for the February 2017 NDD round, *anganwadi* workers were trained at the sector level (which is below the block level) by supervisors. Over 90% of schools and *anganwadis* received tablets for deworming (**Table PM3**). Moreover, 95% of schools and 96% of *anganwadis* reported receiving sufficient drugs for deworming (**Table PM2**). About 85% of schools and 77% of *anganwadis* received handouts/reporting forms (**Table PM3**).

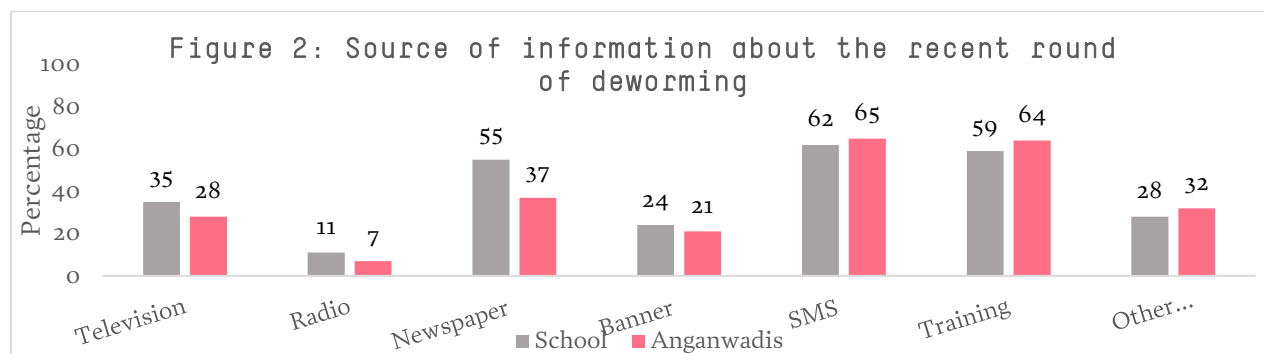
⁴ Integrated distribution of NDD kits includes albendazole, banner/poster and handout/reporting forms and provided to schools and AWC during the trainings.

⁵National Deworming Day, Operational Guidelines 2016, Ministry of Health and Family Welfare, Government of India

http://nrhm.gov.in/images/pdf/NDD-2016/Guidelines/Draft_NDD_2016_Operational_Guidelines.pdf

Among private schools, around 77% received tablets for deworming. Of those that received tablets, 89% reported having a sufficient quantity. Sixty-eight percent of the private schools covered during process monitoring received posters/banners and 69% of private schools reported receiving handouts/reporting forms for deworming (**Table PM6**). Overall, a higher percentage of schools received NDD materials compared to the percentage of schools that attended NDD training. This indicates that few schools collected these materials apart from NDD trainings. This could be due to the reinforcement SMS sent to private schools and follow-up by Evidence Action tele-callers, regional coordinators, and district coordinators.

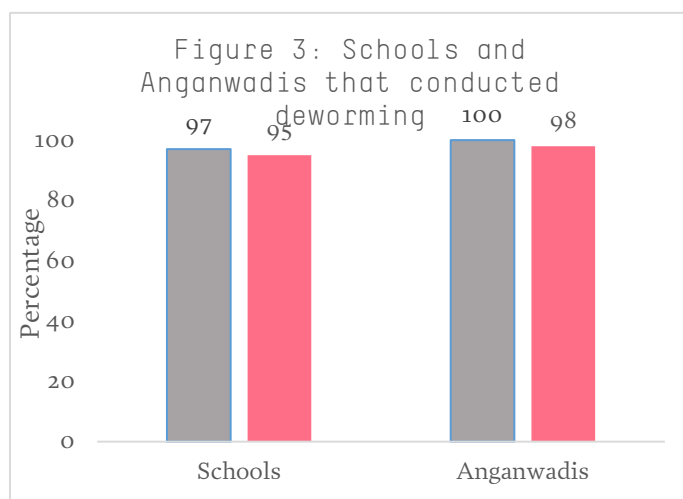
2.3 Source of Information about the Recent Round of NDD



As depicted in **Figure 2**, 62% of schools and 65% of *anganwadis* reported receiving information on NDD via SMS. About half of the schools and 37% of *anganwadis* reported hearing about NDD via the newspaper. The radio was the least effective source of information about NDD for this round, as only 11% of schools and seven percent of *anganwadis* reported hearing about NDD via radio.

2.4 NDD Implementation

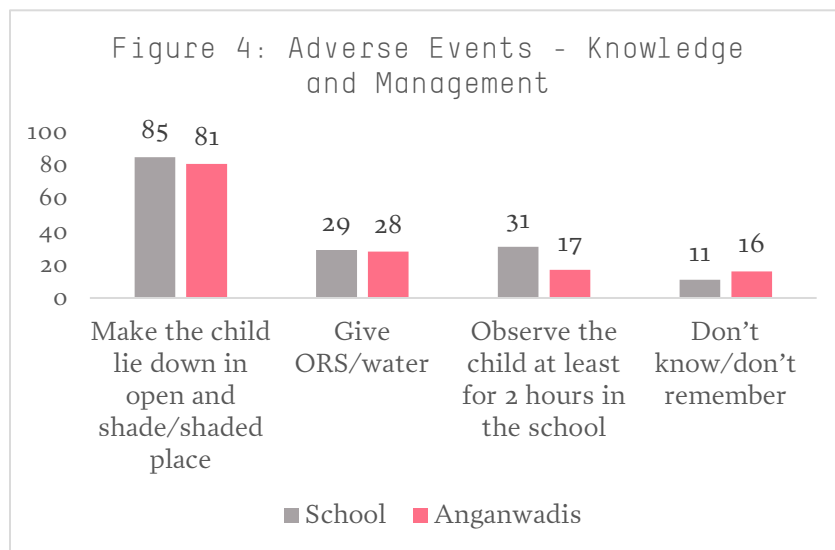
The proportion of schools and *anganwadis* that conducted deworming was high during both the February 2016 and February 2017 NDD rounds (**Figure 3**). The coverage validation data shows that around 95% of schools and 98% of *anganwadis* dewormed children during the February 2017 NDD round or Mop-Up Day (**Table CV1**). Out of 216 schools and 235 *anganwadis* that implemented NDD, monitors were able to observe ongoing deworming activities in 69% of schools and 86% of *anganwadis* respectively (**Table PM4**).



2.5 Adverse Events - Knowledge and Management

Interviews with headmasters and teachers and AWWs revealed a high degree of awareness regarding potential adverse events due to deworming and a high level of understanding of the appropriate protocols to follow in the case of such events. Vomiting was listed as a symptom of an adverse event by 85% of principals and 86% of *anganwadi* workers, followed by abdominal pain by principals (78%) and *anganwadi* workers (67%). Around 21% of school teachers and 15% of *anganwadi* workers recognized fatigue as a symptom (**Table PM5**).

Further, 85% of teachers and 81% of *anganwadi* workers knew to make a child lie down in an open, shaded place in case of any symptoms of an adverse event. Out of the total, 29% of schools and 28% of *anganwadis* also knew to manage the adverse event by giving ORS/water and keeping them under observation for at least two hours at the schools/*anganwadis* (**Figure 4**).



Further, 72% of schools and 68% of *anganwadis* reported the need to call a PHC doctor if symptoms persisted (**Table PM5**).

2.6 Recording Protocol

Coverage validation data demonstrated that 62% of schools and 47% of *anganwadis* followed the correct recording protocols. For the analysis, information on recording protocols was gathered from all schools and *anganwadis* regardless of the availability of reporting forms at the site. Around 13% of schools and 25% of *anganwadis* followed partial protocols (marking down different symbols or making lists of dewormed children), however, 26% of schools and 28% of *anganwadis* did not follow any protocol to keep records of dewormed children (**Table CV2**). As recommended in the NDD guidelines, teachers and *anganwadi* workers were supposed to retain a copy of reporting forms; 93% of headmasters and 91% of *anganwadi* workers were aware of this requirement (**Table PM1**). During coverage validation, we observed that reporting forms were available in only 83% of schools and 55% of *anganwadis*. Despite high awareness among *anganwadi* workers, 45% did not have a copy of the reporting form for verification. Reasons for not retaining a copy of reporting forms include 61% of *anganwadi* workers submitted the reporting form to the ANM, 32% did not receive reporting forms, and seven percent were not able to locate it.

As per the NDD guidelines, Accredited Social Health Activists (ASHAs) have a critical role in the success of the NDD program. As part of the community mobilization and awareness campaign, ASHAs conduct village meetings with parents and disseminate information through local platforms such as *gram panchayats* and village health, sanitation, and nutrition committee (VHSNC) meetings to ensure greater coverage. They inform the community about the harmful effects of worm infestation, benefits of deworming, and the behavior change practices required to reduce re-infection to beneficiaries. ASHAs are also the main point of contact for out-of-school children, who are hard to reach and more heavily infected than school going children. ASHAs can claim an incentive of Rs. 100 after submitting the ASHA reporting form to the ANM by the NDD guidelines.

ASHAs participate in an orientation on NDD during the monthly review meetings. A handout for ASHAs focusing on their roles and responsibilities towards community mobilization is also available in the resources toolkit and is made available to ASHAs through training. After NDD, *anganwadi* workers (AWWs) prepare a list of out-of-school preschool- and school-age children who have missed the dose due to absence or sickness and share the list with ASHAs. ASHAs then make an effort to inform children to be present on Mop-Up Day to take the albendazole dose.

Further, as per the NDD guidelines, ASHAs were required to prepare a list of the children not attending schools and *anganwadis* and submit it to the *anganwadi* workers. However, findings suggest that lists of out-of-school (6-19 years) and unregistered (1-5 years) children were available for only 38% of out-of-school children and 33% of unregistered children in *anganwadis* respectively (**Table CV1**).

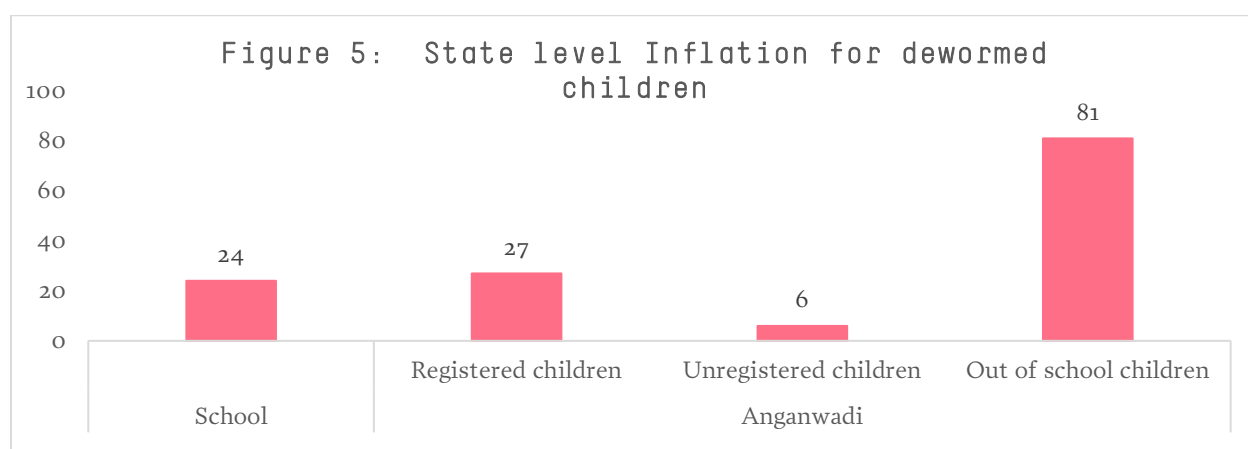
2.7 Data Quality Assessment

Process monitoring and coverage validation are conducted at service delivery points (SDPs) and there is limited understanding regarding data management, aggregation, reporting, and quality assurance at higher aggregation levels (i.e. sub-center/nodal, block and district). Evidence Action, with approval from the state government, jointly implemented the WHO Data Quality Assessment Tool to verify reported data, assess data management, and assess the reporting system for the NDD program in Rajasthan from September-October 2016.

The recommendations from the exercise reiterated the importance of following correct recording protocol, keeping a copy of reporting forms for verification purposes, backing up documentation across all levels of the reporting cascade and emphasizing the reporting cascade in training sessions. Additionally, it will be important to clarify the role of ASHAs for community mobilization and engagement, and adhere to protocol during deworming efforts for out-of-school children as per the NDD guidelines. These recommendations will allow for enhanced program quality.

2.8 Coverage Validation

Verification factors⁶ are common indicators to measure the accuracy of reported treatment values for Neglected Tropical Disease control programs around the world.⁷ The verification factor is a comparison of the aggregated number of ticks in school/*anganwadi* registers (indicating that children were dewormed) to the coverage report submitted by schools/*anganwadis* to the state. Thus, the verification factor was estimated on the basis of the availability of a copy of reporting forms at schools and *anganwadis*. The state-level verification factor for school enrolled children was 0.81, indicating that on average, for every 100 dewormed children reported by the school, eighty-one were verified through available documents. This corresponds to an overall 24% inflation of reporting in the schools, meaning that reported numbers appear to be approximately 24% higher than the numbers recorded in school attendance registers. Similarly, overall state-level verification factors for children dewormed at *anganwadis* was 0.76 with an inflation of 32%. The increase in the inflation rate may be attributed to failure to review aggregated data at schools and *anganwadi* centers prior to its submission to health officials. However, category-wise verification factors for registered (1-5 years), unregistered (1-5 years), and out-of-school (6-19 years) children were 0.79, 0.95 and 0.55 with a corresponding inflation of 27%, 6%, and 81% respectively (**Figure 5**).



The data showed that 62% of schools and 47% of *anganwadis* followed the correct protocols for recording the number of children dewormed on NDD and Mop-Up Day. However, around 26% of schools and 28% of *anganwadis* did not adhere to any recording protocol. Further, a substantial proportion of *anganwadi* workers did not have a list of unregistered preschool-age children (67%) and out-of-school children (62%). Despite instructions to retain a copy of

⁶A 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.

⁷WHO (2013), Data Quality Assessment tool for Neglected Tropical Diseases: Guidelines for Implementation December 2013.

reporting forms during training, the reporting form was not available in 17% of schools and 45% of *anganwadis*. In addition, the findings indicate a state-level inflation rate of 24% (state level verification factor = 0.81) for enrolled children against the verified treatment figures in schools. Similarly, the state-level inflation rate was 27% (state-level verification factor =0.79) for registered children in *anganwadis* and 81% (verification factor =0.55) for out-of-school children. The estimated inflation rate for schools indicates aggregation errors in reporting of children dewormed in schools, a lack of proper documentation, and an aggregation error in reporting of children dewormed in *anganwadi* centers. An inflation rate of six percent (VF=0.95) was observed for unregistered children dewormed at *anganwadi* centers, indicating high quality reporting of coverage data in this group.

Further, interviews of children (N=1,780) at schools indicates that 97% of children received an albendazole tablet and all children who received the tablet reported to consume it under the supervision of teachers. This indicates that despite challenges in reporting and documentation of NDD coverage data, the majority of the children present on NDD or Mop-Up Day consumed the albendazole tablet on either NDD or Mop-Up Day.

The state government reported 86% coverage in schools and 73% in *anganwadis*. Through coverage validation, attempts were made to understand the maximum number of children that could have been dewormed in the schools and *anganwadis*. Coverage validation findings suggest that on average, 81% of treatment figures reported by schools and 76% of treatment figures reported by *anganwadis* were verified by monitors. After applying these verification factors to the respective government reported NDD coverage, we estimated that 70% (81% of 86) of children could have been dewormed in the schools and 55% of children (76% of 73) in *anganwadis*. The verification factors are based on only those schools and *anganwadis* where a copy of reporting forms were available for verification. Therefore, adjusted coverage in schools and *anganwadis* based on verification factors needs to be interpreted with caution.

Further, we have also estimated NDD treatment coverage in schools considering maximum attendance of children on NDD dates. The coverage estimates based on attendance data provides a more robust estimate as compared to adjusted coverage based on the verification factor, as maximum attendance is calculated from all the schools covered during coverage validation. Coverage validation data showed that 95% of schools administered albendazole tablets on either NDD or Mop-Up Day and a maximum of 94% of children were in attendance, 97% of children received an albendazole tablet, and 98% of them reported to consume the tablet under the supervision of a teacher. Taking these factors into account, approximately 85% ($0.95 \times 0.94 \times 0.97 \times 0.98$) of total enrolled children could have been dewormed in the schools.

2.9 Trend Analysis

To understand the changes from the February 2016 to February 2017 NDD rounds, selected indicators are presented in graphical form below. Data in **Figure 6** shows that headmaster/principal and *anganwadi* workers training attendance declined by 10 percentage

points from the February 2016 to February 2017 NDD round. It is crucial that all trainings should be completed as per the pre-determined schedules. If delayed, any changes in the training dates must be communicated to the participants through SMS. Although training reinforcement SMSs were sent to alert district and block level officials and frontline functionaries of training dates, the quality of the contact database continues to impact the overall delivery of SMSs to teachers and *anganwadis* workers.

Evidence Action delivered 25,89,891 out of the target 29,47,761 SMSs, indicating message delivery to 88% of government officials and frontline functionaries in stakeholder departments. **Figures 7 and 8** suggest that the percentage of schools and *anganwadis* that received NDD related SMSs decreased from the February 2016 to February 2017 NDD round. This clearly implies that the need for stakeholder departments to update the contact database on a periodic basis in future rounds so that reinforcement messages and information about training schedules can be sent to functionaries in a timely manner.

Figures 7 and 8 show that the percentage of *anganwadis* that received sufficient drugs remained high during both NDD rounds. However, schools and *anganwadis* that received posters/banners and handouts/reporting forms have increased by nine percentage points in schools and by four percentage points in *anganwadis*.

Adherence to correct recording protocols declined in both schools (25 percentage points) and *anganwadis* (44 percentage points) as compared to the previous NDD round. The substantial decline in the percentage of schools and *anganwadis* following the correct recording protocol demonstrates the need for training sessions on reporting protocol and follow-up SMSs to reiterate the importance of following recording protocols.

Figure 6: Comparison of training indicators for school/*anganwadi* during NDD February 2016 and February 2017 round

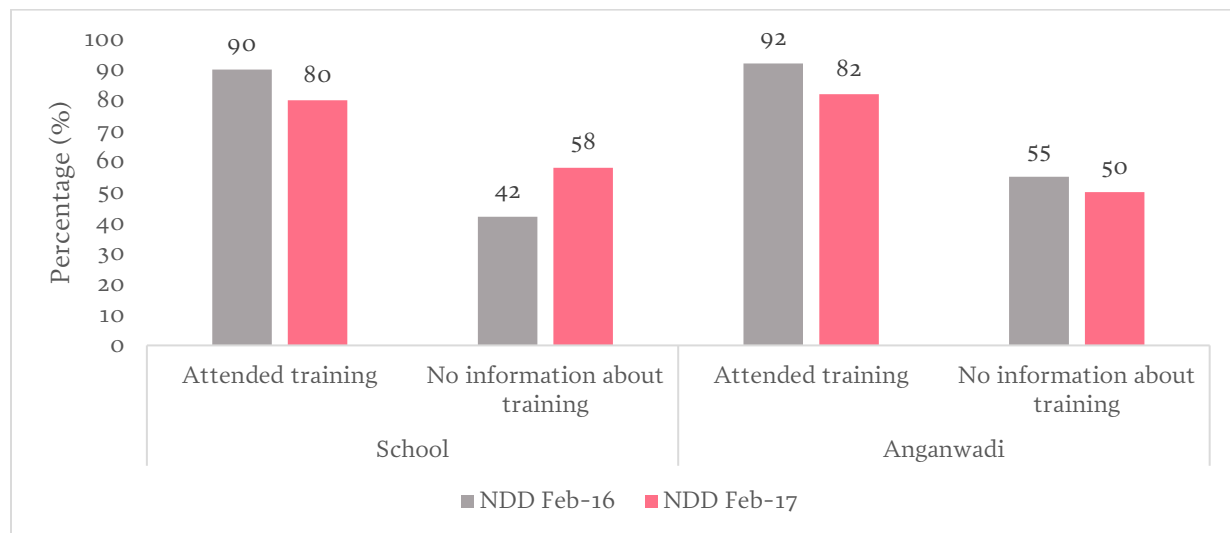


Figure 7: Comparison of key indicators in schools during NDD February 2016 and February 2017 round

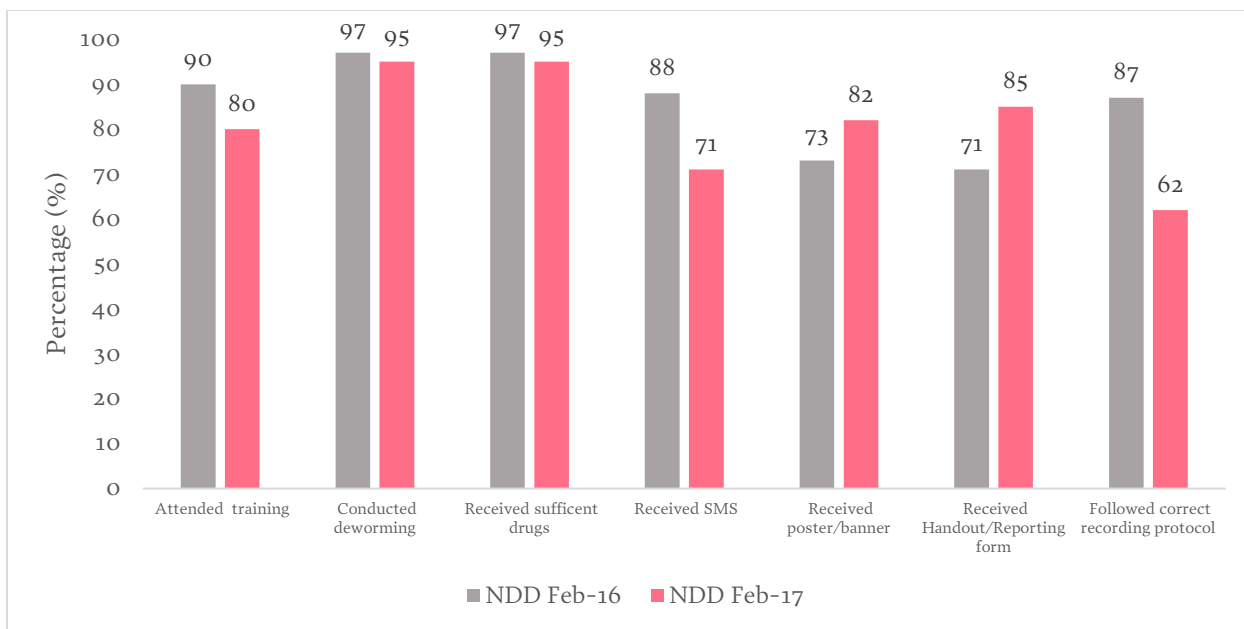
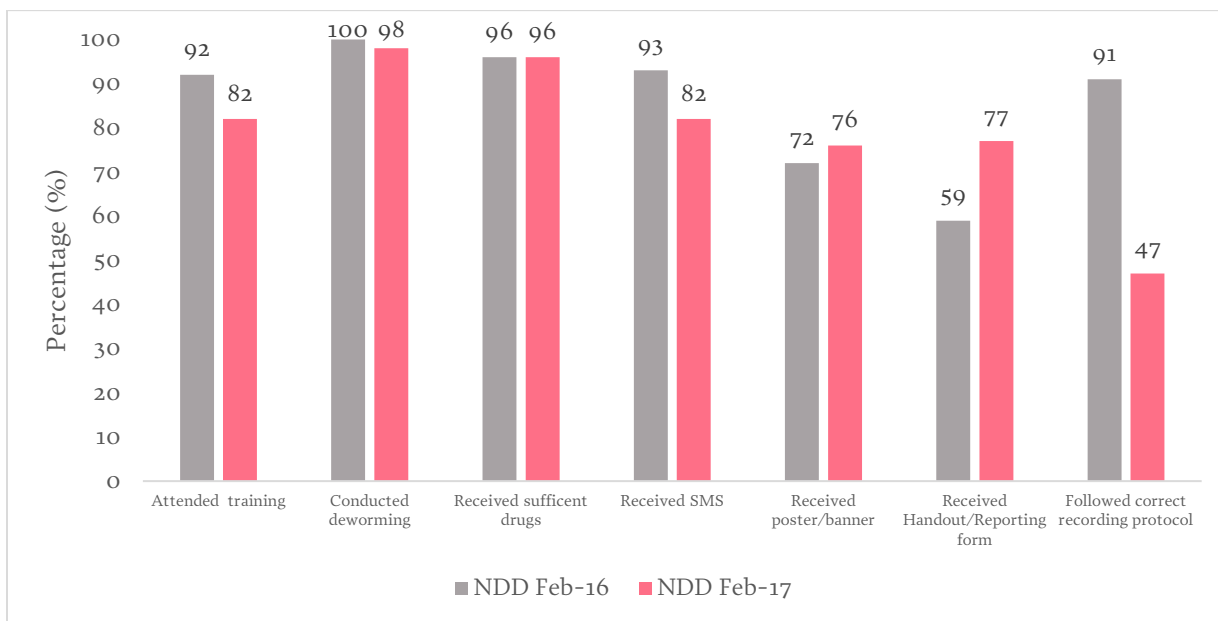


Figure 8: Trend of key indicators in *anganwadis* during NDD February 2016 and February 2017 rounds



3. RECOMMENDATIONS

The independent monitoring exercise conducted during Rajasthan's NDD round in February 2017 identifies gaps and opportunities to improve and strengthen future rounds. National Deworming Day leverages a fixed-day approach, requiring intensive and coordinated efforts between all stakeholders to successfully implement the program and prevent gaps and delays. The following are the key recommendations for program improvements that emerged from the process monitoring and coverage validation exercise.

1. While approximately 80% of teachers and *anganwadis* participated in trainings, there was a decline in participation from February 2016 to February 2017. This can be further encouraged through engagement of district officials and by stressing the need for training attendance on a yearly basis.
2. Findings of coverage validation and trend analysis depicted a declining trend in schools and *anganwadis* following correct recording protocols. Greater emphasis on recording protocols during training is likely to improve the quality of coverage data in the next round. Training and SMS reinforcement messages should highlight the importance of following correct reporting protocols and maintaining accurate and complete documentation. Practical sessions on recording protocols for teachers and *anganwadi* workers should be organized during training sessions.
3. Coverage validation findings revealed a lesser availability of a copy of reporting forms at schools and *anganwadis*. This directly impacts the evaluation of reported coverage data. Trainers should ensure that teachers and headmasters understand the directive to maintain a copy of reporting forms in schools so that the data available for coverage validation is more robust. This can be further strengthened if messages on correct recording protocol are reinforced at the trainings.
4. The number of school headmasters and *anganwadi* workers that received deworming related SMSs declined since the August 2016 NDD round. The contact database of functionaries needs to be updated across all stakeholder departments to ensure the maximum reach of reinforcement messages among the school teachers and *anganwadi* workers. Updating the contact database will also help to further facilitate comprehensive, effective, and timely dissemination of information to functionaries.
5. While a slight increase in integrated distribution is evident from the August 2016 to February 2017 NDD round in Rajasthan, it is still low and indicates a need for further strengthening. Most schools and *anganwadis* received training and IEC materials, however, the low level of integrated distribution demonstrates the need for focused efforts to align the distribution cascade (NDD kits) to be handed over to the teachers/headmasters and *anganwadi* workers at the time of training. To effectively facilitate the distribution of NDD kits at block level trainings, efficient planning for

timely drug procurement and dissemination of training schedules is required. Reinforcement on integrated distribution during video conferences and through SMS alerts will also be helpful in facilitating integrated distribution.

6. In order to achieve higher treatment coverage, greater emphasis should be placed on generating community awareness and mobilizing out-of-school children. As a substantial proportion of *anganwadi* centers did not have lists of unregistered and out-of-school children, ASHAs need to be involved in mobilizing out-of-school children and spreading awareness on deworming benefits. Efforts are required to increase ASHA participation and engage ASHAs to prepare these lists in their communities.

4. WAY FORWARD

Program monitoring of the February 2017 NDD round in Rajasthan has provided useful insights on opportunities to increase coverage in future NDD rounds, while also identifying gaps in program planning and implementation. Evidence Action will continue to work with the Government of Rajasthan to coordinate efficient planning, strategies for integrated distribution and its supervision, and ways to improve recording and reporting protocol. Further attention needs to be directed on scaling the program in private schools. ASHAs and *anganwadi* workers must be further engaged and encouraged to conduct community meetings, mobilize out-of-school children, and facilitate health education activities.

ANNEXURE :

Table PM1: Training, awareness and source of information about NDD among teachers/headmasters and *anganwadi* workers, February 2017

Indicators	School			<i>Anganwadi</i>		
	Denominator	Numerator	%	Denominator	Numerator	%
Attended training for current round of NDD	250	201	80	250	204	82
Reasons for not attending NDD training (Multiple Response)						
Location was too far away	49	0	0	46	43	93
Did not know the date/timings/venue	49	29	58	46	23	50
Busy in other official/personal work	49	8	17	46	7	15
Attended deworming training in the past	49	11	22	46	14	30
Not necessary	49	7	14	46	0	0
No incentives/no financial support	49	1	2	46	0	0
Trained teacher provided training to						
All other teachers	201	135	67	NA	NA	NA
Few teachers	201	25	12	NA	NA	NA
No (himself/herself only teacher)	201	25	13	NA	NA	NA
No, did not train other teachers	201	16	8	NA	NA	NA
Awareness about the ways a child can get worm infection	250	220	88	250	220	88
Different ways a child can get worm infection (Multiple Response)						

Indicators	School			Anganwadi		
	Denominator	Numerator	%	Denominator	Numerator	%
Not using sanitary latrine	220	145	66	220	119	54
Having unclean surroundings	220	151	69	220	158	72
Consume vegetables and fruits without washing	220	126	57	220	102	46
Having uncovered food and drinking dirty water	220	130	59	220	127	58
Having long and dirty nails	220	117	53	220	100	45
Moving in bare feet	220	130	59	220	133	60
Having food without washing hands	220	158	72	220	157	71
Not washing hands after using toilets	220	134	61	220	108	49
Awareness about all the possible ways a child can get worm infection⁸	220	43	19	220	37	17
Perception that health education should be provided to children	250	246	99	250	243	97
Knowledge about correct dose of albendazole tablet						
1-2 years of children	NA	NA	NA	250	238	95
6-19 years of children	250	240	96	250	245	98
Awareness about non-administration of albendazole tablet to sick child						
Will administer albendazole tablet to sick child	250	10	4	250	6	2
Will not administer albendazole tablet to sick child	250	240	96	250	244	98
Awareness about consuming albendazole tablet						
Chew the tablet	250	242	97	250	243	97
Swallow the tablet directly	250	8	3	250	7	3
Awareness about consuming albendazole in school/anganwadi	250	246	98	250	246	98
Awareness about the last date for submitting the reporting form	250	138	55	250	131	52
Aware that completed reporting form should be submitted to Nodal headmaster/ANM	250	165	66	250	139	56
Awareness about retaining a copy of the reporting form post submission	250	234	93	250	228	91
Source of information about current NDD round (Multiple Response)						
Television	250	88	35	250	71	28
Radio	250	28	11	250	18	7
Newspaper	250	139	55	250	93	37
Banner	250	60	24	250	52	21
SMS	250	155	62	250	163	65
Other school/teacher/anganwadi worker	250	70	28	250	79	32
Training	250	148	59	250	154	64
Received SMS for current NDD round	250	177	71	250	206	82

⁸Includes those who were aware that a child can get worm infection if she/he does not use sanitary latrine, have unclean surroundings, consume vegetable and fruits without washing, have uncovered food and drinking dirty water, have long and dirty nails, moves in bare fee, have food without washing hands and not washing hands after using toilets.

Table PM2: Deworming activity, availability of albendazole tablets and list of unregistered out-of-school children, February 2017

Indicators	School			<i>Anganwadi</i>		
	Denominator	Numerator	%	Denominator	Numerator	%
Albendazole tablet administered on the day of visit						
Yes, ongoing	250	129	52	250	169	68
Yes, already done	250	43	17	250	46	18
Yes, after sometime	250	40	16	250	16	6
No, will not administer today	250	38	15	250	19	8
Schools/<i>anganwadis</i> conducted deworming on either of the day⁹	250	216	86	250	235	94
Schools/<i>anganwadis</i> conducted deworming on NDD¹⁰	120	109	91	123	116	94
Schools/<i>anganwadis</i> conducted deworming on Mop-Up Day¹¹	130	103	79	127	115	91
Attendance on NDD	16198	13691	85	NA	NA	NA
Attendance on Mop-Up Day	25513	21215	83	NA	NA	NA
Reasons for not conducting deworming						
No information	34	20	52	15	7	37
Albendazole tablet not received	34	11	30	15	6	32
Apprehension of adverse events	34	3	8	15	2	11
Others ¹²	NA	NA	NA	NA	NA	NA
<i>Anganwadis</i> having list of unregistered/out-of-school children	NA	NA	NA	250	124	50
Albendazole was administered to out-of-school children	NA	NA	NA	231	188	81

⁹Schools/*anganwadis* administered albendazole tablet to children either on NDD or Mop-Up Day

¹⁰Based on the samples visited on National Deworming Day only.

¹¹Based on the samples visited on Mop-Up Day only.

¹²School administer the albendazole tablet to children a day before holiday, children/student absent, postponed due to festival.

Albendazole was administered to unregistered children	NA	NA	NA	231	196	85
Sufficient quantity of albendazole tablets ¹³	227	216	95	237	227	96

Table PM3: Integrated distribution of albendazole tablets and IEC materials, February 2017

Items	Schools				Anganwadi			
	Received (N=250)	Denominator*	Received in training	Verified	Received (N=250)	Denominator*	Received in training	Verified
Albendazole tablet	91(227)	227	91(206)	97(220)	95(237)	237	86(204)	98(233)
Poster/banner	82(204)	209	93(190)	96(196)	76(189)	189	87(165)	95(180)
Handouts/ reporting form	85(213)	213	93(197)	97(206)	77(193)	193	85(165)	96(185)
Received all materials	80(201)	201	92(184)	93(187)	68(169)	169	83(141)	92(155)
Integrated distribution¹⁴	74(184)				56(141)			

Note: The denominator for item “received” is for schools and for *anganwadis*; Numerators for “received in training” and “verified” are given in parentheses; *Indicates common denominator for “received in training” and “verified”

Table PM4: Implementation of deworming activity and observation of monitor's, February 2017

Indicators	Schools			Anganwadi		
	Denominator	Numerator	%	Denominator	Numerator	%
Deworming activity was taking place	212	162	76	231	181	78
Albendazole tablets were administered by¹⁵						
Teacher/headmaster	129	126	98	169	3	2
Anganwadi worker	129	1	1	169	141	83
ASHA	129	1	1	169	24	14
ANM	129	0	0	169	1	1
Student	129	1	1	NA	NA	NA
Followed any recording protocol¹⁶	172	147	86	215	178	83
Protocol followed						
Putting single/double tick	147	138	94	178	132	74
Put different symbols	147	3	2	178	8	4
Prepare the separate list for dewormed	147	6	4	178	38	21

¹³ This indicator is based on the sample that received albendazole tablet.

¹⁴Integrated distribution of NDD kits includes albendazole tablet, banner/poster and handout-reporting forms and provided to schools and AWCs during the trainings at block or PHC level.

¹⁵ Percentage of this indicator for school is more than 100, as these are weighted figures.

¹⁶Any recording protocol implies putting single tick (✓), double tick (✓✓), any other symbol or preparing separate list for all those children administered albendazole tablets on NDD or Mop-Up Day.

Visibility of poster/banner during visits	204	143	70	189	124	66
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Table PM5: Knowledge of Adverse events and its Management, February 2017

Indicators	Schools			<i>Anganwadi</i>		
	Denominator	Numerator	%	Denominator	Numerator	%
Opinion of occurrence of an adverse event after administering albendazole tablet	250	85	34	250	101	40
Knowledge of possible adverse events (Multiple Response)						
Mild abdominal pain (B22)	85	66	78	101	68	67
Nausea	85	56	66	101	62	61
Vomiting	85	72	85	101	87	86
Diarrhea	85	17	20	101	28	28
Fatigue	85	21	24	101	15	15
All possible adverse event ¹⁷	85	5	6	101	9	4
Awareness about mild adverse event management (Multiple Response)						
Make the child lie down in open and shade/shaded place	250	212	85	250	202	81
Give ORS/water	250	72	29	250	71	28
Observe the child at least for 2 hours in the school	250	77	31	250	42	17
Don't know/don't remember	250	28	11	250	39	16
Awareness about severe adverse event management (Multiple Response)						
Call PHC or emergency number	250	180	72	250	171	68
Take the child to the hospital /call doctor to school	250	144	58	250	157	63
Don't know/don't remember	250	8	3	250	7	3
Occurrence of cases of any adverse event	172	4	2	215	13	6
Available contact numbers of the nearest ANM or MO-PHC	250	204	82	250	222	89

Table PM6: Selected Indicators of Process Monitoring in Private Schools, February 2017

Indicators ¹⁸	Denominator	Numerator	%
Attended training for current round of NDD	82	51	62
Received albendazole tablets	82	63	77
Sufficient quantity of albendazole tablets	63	56	89
Received poster/banner	82	56	68
Received handouts/ reporting form	82	57	69

¹⁷Includes those who have knowledge that a mild abdominal pain and nausea and vomiting and diarrhea and fatigue can be reported by a child after taking albendazole tablet.

¹⁸These indicators are based on small samples, therefore, precautions should be taken while interpreting the results as these are not representative of all private schools in the state

Received SMS for current NDD round	82	53	64
Albendazole administered to children	82	52	63
Reasons for not conducting deworming			
No information	30	17	57
Albendazole tablets not received	30	9	30
Apprehension of adverse events	30	3	10
Albendazole tablet administered to children by teacher/headmaster¹⁹	29	28	95
Perceive that health education should be provided to children	82	81	99
Knowledge about correct doses of albendazole tablet	82	74	89
Awareness about non-administration of albendazole tablet to sick child	82	5	6
Opinion of occurrence of an adverse event after taking albendazole tablet	82	24	29
Opinion of occurrence of possible adverse events			
Mild abdominal pain	24	17	71
Nausea	24	15	61
Vomiting	24	22	94
Diarrhea	24	8	34
Fatigue	24	7	27
Awareness about mild adverse event management			
Let the child rest in an open and shaded place	82	60	72
Provide clean water to drink/ORS	82	27	33
Contact the ANM/nearby PHC	82	47	57
Available contact numbers of the nearest ANM or MO-PHC	82	64	78
Followed correct²⁰ recording protocol	32	30	92

Table CV1: Findings from Schools and *Anganwadis* Coverage Validation Data

Indicators	Schools			<i>Anganwadis</i>		
	Denominator	Numerator	%	Denominator	Numerator	%
Conducted deworming²¹	625	593	95	625	611	98
Day of albendazole administration (Multiple Response)						
National Deworming Day	593	585	99	611	601	98
Mop-Up day	593	533	90	611	563	92
Between NDD and Mop-Up Day	593	20	3	611	35	6
Reasons for not conducting deworming						
No information	32	14	45	14	4	29
Drugs not received	32	14	45	14	10	71
Apprehension of adverse events	32	2	7	14	0	0
Others ²²	32	1	3	14	0	0
Albendazole left after deworming	593	427	72	611	416	68
Number of albendazole left						
Less than 50 tablets	427	365	86	416	338	81
50-100 tablets	427	39	9	416	56	13

¹⁹This indicator is based on samples where deworming was ongoing.

²⁰Correct recording protocol implies putting single tick (✓) on NDD and double tick (✓✓) on Mop-Up Day for all those children administered albendazole tablets.

²¹ Schools and *anganwadis* that conducted deworming on NDD or Mop-Up Day.

²² Other includes, absence of headmaster/teacher.

More than 100 tablets	427	23	5	416	23	5
Copy of reporting form was available for verification	593	492	83	611	336	55
Reasons for non-availability of copy of reporting form						
Did not received	101	38	38	275	89	32
Submitted to Nodal headmaster/ANM	101	49	48	275	167	61
Unable to locate	101	14	14	275	19	7
Other	101	0	0	275	0	0
<i>Anganwadis</i> having list of unregistered children	NA	NA	NA	611	203	33
<i>Anganwadis</i> having list of out-of-school children	NA	NA	NA	611	230	38

Table CV2: Recording protocol, verification, inflation and attendance in schools and *anganwadis*

Indicators	School			<i>Anganwadis</i>		
	Denominator	Numerator	%	Denominator	Numerator	%
Followed correct ²³ recording protocol	593	365	62	611	289	47
Followed partial ²⁴ recording protocol	593	77	13	611	150	25
Followed no ²⁵ recording protocol	593	152	26	611	171	28
State-level verification factor ²⁶	70350	56810	0.81	32443	24662	0.76
<i>Anganwadi</i> registered children	NA	NA	NA	18595	14603	0.79
<i>Anganwadi</i> unregistered children	NA	NA	NA	6116	5785	0.95

²³ Correct recording protocol includes schools where all the classes put single tick (✓) on NDD and double tick (✓✓) on Mop-Up Day to record the information of dewormed children.

²⁴ Partial recording protocol includes schools where all the classes did not follow correct protocol, put different symbols and prepared separate list to record the information of dewormed children.

²⁵ No protocol includes all those schools where none of the classes followed any protocol to record the information of dewormed children.

²⁶ Ratio of recounted value of the dewormed children to the reported value. This calculation is based on only those schools (n=492) and *anganwadis* (n=336) where deworming was conducted and copy of reporting form was available for verification.

Out-of-school children	NA	NA	NA	7732	4273	0.55
State-level inflation rate²⁷	56810	13540	24%	24662	7781	32
<i>Anganwadi</i> registered children	NA	NA	NA	14603	3992	27
<i>Anganwadi</i> unregistered children	NA	NA	NA	5785	331	6
Out-of-school children	NA	NA	NA	4273	3549	81
Attendance on previous day of NDD	95155	82311	87	NA	NA	NA
Attendance on NDD	95155	82718	87	NA	NA	NA
Attendance on Mop-Up Day	95155	80689	85	NA	NA	NA
Children who attended on both NDD and Mop-Up Day	95155	74077	78	NA	NA	NA
Maximum attendance of children on Deworming Day and Mop-Up Day²⁸	95155	89329	94	NA	NA	NA
School level inflation rate for schools followed the correct recording protocol	46956	-2050	-4	NA	NA	NA
Estimated NDD coverage based on verification factor²⁹	70			55		
Estimated NDD coverage based on school attendance³⁰	85					

Table CV3: Indicators based on interview of children during coverage validation in schools

Indicators	Denominator	Numerator	%
Children received Albendazole tablets	1780	1730	97
Children consumed Albendazole tablet	1730	1724	100
Children aware about the Albendazole tablets	1730	1421	82
Source of information about NDD round			
Teacher/school	1421	1400	99
Television	1421	72	5
Radio	1421	46	3
Newspaper	1421	96	7
Poster/Banner	1421	208	15
Parents/siblings	1421	61	4

²⁷ Proportion of over reported dewormed children against total verified children in schools and *anganwadis*.

²⁸ Maximum attendance refers to the total attendance of children who were exclusively present in school either on NDD or Mop-Up Day and children who attended school on both days.

²⁹ This was estimated by implying state-level verification factor on government reported coverage for schools and AWC.

³⁰ This was estimated on the basis of NDD implementation status, attendance on NDD and Mop-Up Day, whether child received albendazole and its supervised administration. Since no child interview is conducted at *anganwadis*, this has not been estimated for *anganwadis*.

Friends/neighbors	1421	54	4
Way children consumed the tablet			
Chew the tablet	1724	1631	95
Swallow tablet directly	1724	93	5
Supervised administration of tablets	1724	1682	98