Bihar School based Mass Deworming Program

[2013-14]

Deworm the World Initiative

Operated by Action Foundation for Social Services

[June 2014]

Evidence Action

Deworm the World Initiative

THE END FUND | ENDING NEGLECTED DISEASES

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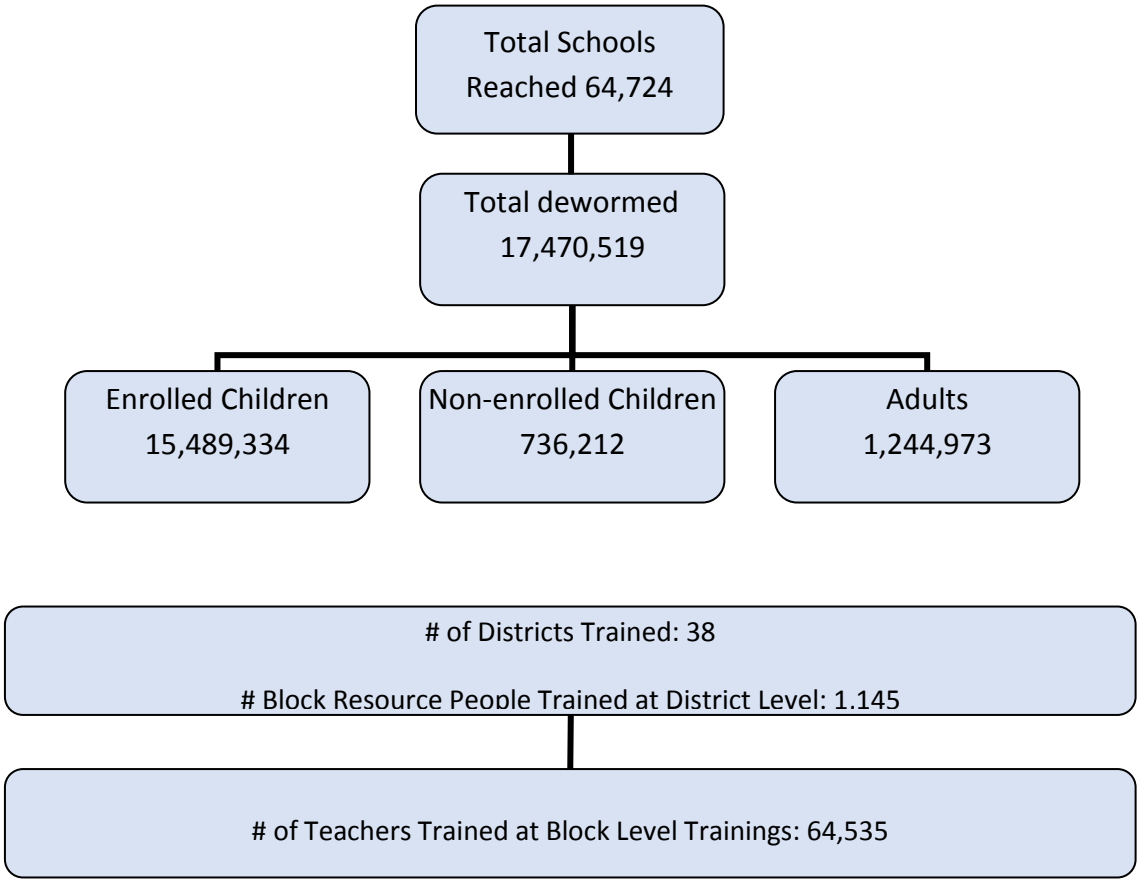
GLOSSARY

ANM - Auxiliary Nurse and Midwife
BEO – Block Education Officer
BEPC - Bihar Education Project Council
BHM - Block Health Manager
BMSICL- Bihar Medical Services and Infrastructure Corporation Limited
BRPs - Block Resource Persons
CS- Civil Surgeon
CRCCs – Cluster Resource Centre Coordinator
DCC- District Coordination Committee
DEO – District Education Officer
DM – District Magistrate
DPO- District Program Officer
DPM - District Programme Manager
DSHCC- District School Health Coordination Committee
DtWI - Deworm the World Initiative
ED- Executive Director
EFE – Elementary Formal Education Coordinator
GoI- Government of India
IAS – Indian Administrative Services
IDA – Iron Deficiency Anemia
IEC - information, education, and communication
MOIC- Medical Officer in Charge
NFCP - National Filaria Control Programme
NIPI – National Iron Plus Initiative
NRHM- National Rural Health Mission
PHC - Primary Health Centre
SHSB - State Health Society Bihar
SPD- State Project Director
SSHCC - State School Health Coordination Committee
STH - soil transmitted helminthes
VSHND- Village Sanitation Health and Nutrition Day
VSS- Village Shiksha Samiti (Village Education Committee)
WIFS- Weekly Iron Folic Acid Supplementation
WHO - World Health Organization

EXECUTIVE SUMMARY

Key Achievements in Round Three

Bihar implemented the third round of the School-based Deworming Program on 23 January 2014, followed by Mop-Up Day on 28 January 2014. This round targeted deworming to approximately 19.2 million school enrolled children plus and additional number of non-enrolled children through the network of 70,716 schools across 38 districts of Bihar. This round dewormed 17.47 million people, out of which 15.49 million were enrolled children, 0.74 million non-enrolled children, and 1.24 million adults. The Bihar school-based mass deworming program is the world's largest school-based deworming program and has set a new benchmark in Round 3 by deworming the highest percentage of school enrolled children dewormed to-date. The success has been the result of the robust partnership between the State Health Society Bihar (SHSB), the Bihar Education Project Council (BEPC), and Evidence Action- Deworm the World Initiative (DtWI).



BACKGROUND

The Rationale for School-Based Deworming

In India, approximately 240 million children[1] are at risk of infection from intestinal worms, which can cause malnutrition and anemia and stunt children's physical and cognitive development. In fact, rigorous studies have shown that dewormed children have increased school attendance, better educational outcomes and even earn higher wages as adults than similarly vulnerable children who are not regularly dewormed.

There is a simple solution: by providing a single dose of safe, effective medicine to each child once or twice per year, worm infections can be treated and prevented. The existing and extensive infrastructure of schools provides the most efficient way to reach the highest number of children, and teachers, with support from the local health system, can administer treatment with minimal training.

Indian Scenario

Prior to 2012, deworming of children had not been receiving significant attention in any of the health policies/strategies from the Indian public health system. Deworming medication was being given to children, but only to those children who were suspected of being infected with worms to treat specific symptoms. The singular mass administration of Albendazole (aside from the DtWI supported school-based deworming program in Bihar) was being done under National Filaria Control Program in fifteen Lymphatic Filariasis endemic states.

Starting from the financial year 2012-13, the Ministry of Health & Family Welfare formulated and recommended a number of child health programs to states that include mass deworming of children. The key programs under this initiative from the Government of India are: the Weekly Iron and Folic Acid Supplementation (WIFS) and the National Iron + Initiative (NIPI). Both these programs identify STH infection as a cause of Iron Deficient Anemia (IDA) among children and recommend mass deworming of children using schools as platforms. Currently many states are successfully implementing WIFS and are in the process of setting up systems for NIPI implementation.

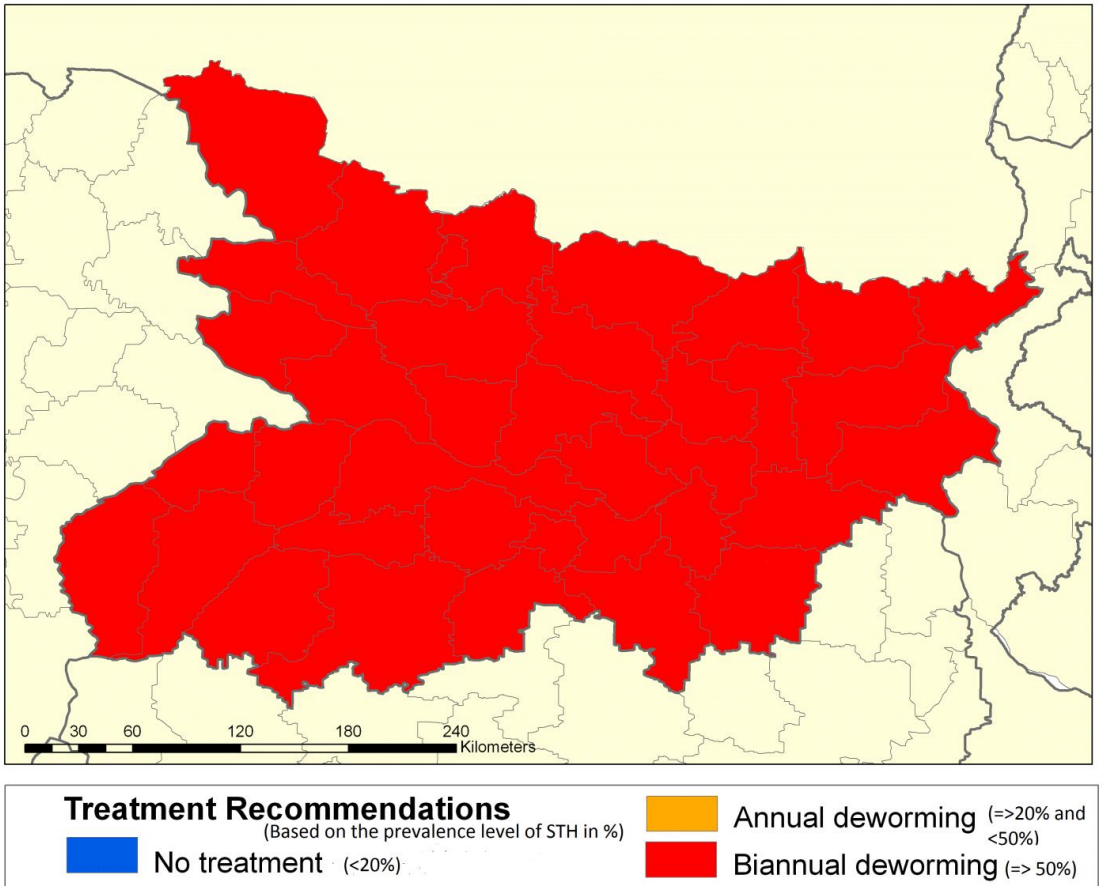
Scenario in Bihar

Between August 2010 and February 2011, DtWI and the Bihar government collaborated on a prevalence survey with school-aged children in six districts, Patna, Supaul, Araria, Aurangabad, Muzafferpur and Gopalganj to determine the baseline prevalence of Soil-Transmitted Helminths (STH) in the state. The results revealed STH prevalence across Bihar of 67.5%, with district prevalence ranging from 49% to 79.6%. The prevalence findings were suggestive of the need for biannual mass

[1] http://www.who.int/neglected_diseases/preventive_chemotherapy/sth/db/?units=minimal&region=all&country=all&countries=all&year=all, Countries X indicator, soil transmitted helmintheasis, World Health Organisation

deworming as per World Health Organization (WHO) recommendation.[2] The treatment recommendation map was developed using prevalence study data and is shown in Figure 1.

Figure 1: Bihar Treatment Recommendation Map



Based on the treatment recommendations, the Government of Bihar decided to implement biannual state wide deworming beginning in 2011. DtWI's school-based deworming program would ensure one round of mass drug administration for all school-aged children in Bihar. A second dose of deworming treatment would be provided through the existing National Filaria Control Program (NFCP), which annually distributes Albendazole to all segments of the population. Building synergies between neglected tropical disease initiatives, such as NFCP and STH control programs, reflected the intent for a sustainable approach to addressing worm prevalence in the state through biannual deworming.

As the national government began to realize the importance of deworming as part of an integrated approach to addressing malnutrition in various segments of the population, states began to provide deworming through these malnutrition-targeting programs, as required by the national government. One of these national programs, WIFS (Weekly Iron and Folic Supplementation), was launched in

[2] "Helminth Control in School-age Children, A guide for managers of Control Programmes". Second Edition, 2011, *World Health Organization*.

Bihar in May 2014. WIFS is a national flagship program that targets school children between 10 and 19 years of age, and out-of-school adolescent girls. It recommends biannual deworming along with iron supplementation, and Bihar is planning to roll out WIFS this year. DtWI has been closely working with SHSB as technical partners to prepare the state for integrating the existing school-based deworming program with WIFS. In addition, the state will need to target previously missing populations of pre-school children and women of reproductive age, in an integrated program under the National Iron Plus Initiative in 2014-15.

Program History

In 2009, in recognition of the cost-effectiveness and high impact of school-based deworming on the health and education of children, SHSB and BEPC committed to launch a state-wide school-based deworming program. To pursue this objective, the State School Health Coordination Committee (SSHCC), also referred to as the Steering Committee, decided to conduct a prevalence survey to understand STH prevalence around the state. The results of this STH prevalence survey convinced the government to implement a school-based mass deworming program. The Steering Committee is comprised of members from DtWI and state government bodies, SHSB and BEPC.

With the goal of reducing the worm prevalence among school-age children in Bihar, the first round of school-based deworming was rolled out in all 38 districts, in three phases between February and April 2011. The deworming program dewormed 16.03 million (76%) school-aged children in approximately 67,000 government schools and reached an additional one million non-enrolled children, a population typically difficult to reach, earning the distinction of being the world's largest school-based deworming program. Following the first round's success, the Bihar Government committed to further rounds of school-based deworming.

Subsequently, the second round of the program was rolled out in September 2012, covering all 38 districts on a single day. The program dewormed 16.93 million people, of which 15.84 million (79%) were school-enrolled children. In this round of deworming, an additional 0.5 million non-enrolled children and 0.6 million adults were dewormed, and the program retained its distinction of being the world's largest school-based deworming program.

Both the deworming rounds, huge in scale, provided lessons to the implementing team which would be useful for any school-based campaign programs.

Lessons Learned from Round 1

The deworming program in 2011 provided many opportunities for learning and growth. Partners implementing the program realized that administering the program in phases, as opposed to a single deworming day, was a time consuming exercise for the concerned departments. Partners also realized that getting reporting forms from all the schools was quite challenging and time consuming in a phased system.

Course Corrections

Based on experiences of the first round, the SSHCC decided to conduct the second round on one date across the state. The reporting system was revised to collect school summary forms and consolidate them at block-level, detailing all the schools under the respective blocks. The District Education Office

was only required to ensure the collection of these consolidated forms and their submission to the BEPC rather than do a district level consolidation. This change not only reduced the effort at district level but also ensured more detailed data on coverage of deworming. However, in spite of these changes, report collection continued to be a major challenge in Round 2, as coverage data was not available for sharing until more than 10 months after deworming.

Lessons Learned from Round 2

Despite the lessons learned in Round 1 and course corrections applied in Round 2, there were several important lessons that resulted from the second round of deworming:

1. *District-level program ownership and collaboration is critical:* Lack of program ownership and inter-departmental coordination at the district level slowed down the program execution, particularly the report collection, in a number of districts.

2. *Invest in public awareness efforts:* Enhanced media awareness about the program's date, venue, drugs used, mild adverse events, and target population would have been helpful in making the program more successful. Such awareness would have educated people on the benefits of deworming and mitigated apprehensions about deworming in case sporadic mild adverse events were reported in the press. It appears that the absence of print and electronic media awareness in Round 2 actually fuelled public reluctance to take the treatment after media reported a few adverse events.

3. *District-level training with all Cluster Resource Centre Coordinators (CRCCs) is of critical importance:* CRCC positions were filled by one or two teachers elected by the cluster (grouping of schools) to attend trainings. These CRCCs then trained teachers from each school in their cluster. In previous rounds, it was observed that the content and quality of the training diminished when trainers provided training at the district level. This decline in quality could have been attributed to many reasons, such as increased time lag between each level of the cascade, or the trainers not being professional trainers particularly attached to the program. Identifying and controlling the factors affecting the quality of district level training is an important component of ensuring a higher quality program in the future.

4. *Timely report collection should be prioritized so that results can be disseminated:* Delays in report collection could have affected the program's reputation, as well as that of the state government. Report collection has to be targeted within 3 months of the completion of a deworming round, to ensure that stakeholders receive program information within a reasonable timeframe to make decisions about future rounds.

5. *Careful work planning needs to be done to ensure that all milestones can be completed*: In order to ensure that tasks required of government departments are completed, it is important to give each department sufficient turnaround time. For example, the newspaper appeal could not be made because sufficient turnaround time was not given.

6. *Process monitoring via tele-calling teams should be prioritized:* Process monitoring could have been improved and enriched with the help of a tele-calling team to assess the extent to which the state was ready for implementation prior to deworming day, and to take corrective action in areas where deficits appeared. The inability to leverage tele-callers for connecting with districts, blocks, and

schools made the identification of problems in the system much more difficult. Collecting mobile numbers of all major department staff would have facilitated direct communications with important stakeholders via phone or SMS. Mobile numbers would also have been helpful in spreading awareness, sending reminders about important dates, and collecting reports.

7. *Severe adverse events protocols need to be distributed:* Despite the fact that no severe adverse events occurred, it is necessary to develop a protocol as mandated by WHO for mass drug administration. The same provides guidance to the concerned stakeholders with necessary guidance in case a situation arises.

Course Corrections

On the basis of these learnings, the following corrective actions were taken during the implementation of Round 3:

1. Formation of District level Coordination Committees (DCCs) was proposed, accepted, and initiated by the State School Health Coordination Committee (SSHCC), also known as the Steering Committee. This ensured greater involvement of the district administration to bring more efficiency, timeliness and speedy decision-making to the entire program. The committee was formed at the district level, led by a District Magistrate, and constituted by the District Education Officer and Civil Surgeon. These DCCs provided a district level body to review the program updates periodically (mostly on a monthly basis), identify deviations, and solve any problems at the district level by involving district administration. In addition, these DCCs were critical in speeding up the report collection substantially. In order to ensure that the DCCs met as planned and gave due priority to the program, DtWI employed short term consultants (called District or Regional Coordinators) to visit most of the districts, initiate periodic meetings of this committee, and keep track of them. Out of 38 districts, approximately 25 held at least one DCC meeting.

2. DtWI drafted an operational plan which proposed the extensive use of newspaper appeals, radio appeals, posters, various methods of community mobilization, press sensitization meetings, and inauguration functions held at the district level. All of these proposals, along with miking announcements in all blocks, were approved by SSHCC in the November 1, 2014 meeting, and subsequently implemented.

3. In Round 3, DtWI proposed, hired, and trained a group of professionals to conduct the district level trainings. The SSHCC also decided to use Block Resource Persons (BRP) instead of Cluster Resource Centre Coordinator (CRCC) for cascading the training to headmasters, because it was felt that they were more appropriate for this role. The significant change in this round was the deployment of a two-layered training cascade instead of the three-layered cascade of the previous round; this time, training occurred at the district and block levels only whereas previous rounds included trainings at the state, block, and then the school level. This consolidation was intended to mitigate the loss of quality that seemed to occur with multi-level trainings.

4. To ensure a simplified approach to reporting, the following changes to the structure were made: a) School summary reports were simplified to one page; b) Consolidation of data at the block and district level was replaced with the collection of school summary reports from blocks and districts; c) DCCs

became responsible for form collection; d) Strict timelines for report submission were emphasized in the training cascade; and e) DtWI followed up with district and block level officials with its team of tele-callers, district coordinators, and regional coordinators to ensure timely report submission. This multi-pronged strategy resulted in approximately 90% forms being collected by the end of February 2014, within one month of deworming. Compared to the 10 months this same process had taken in Round 2, this was quite an achievement.

5. An operational plan was developed and approved, keeping the necessary inter-departmental turn-around times in mind. The sharing and approval of this operational plan helped to ensure that responsibilities and timelines were clear, and tasks were completed as planned by the various departments and government contracted vendors.
6. A team of tele-callers was hired by DtWI to track deliveries of drugs, IEC materials, and forms, and to follow up on the training cascade daily. They shared updates with the state team, which regularly updated SHSB and BEPC on any major deviations and corrective interventions. The tele-calling team made calls to all DEOs, BEOs, BEO offices, and some schools for delivery tracking or for preparatory monitoring purposes. Subsequent to the deworming, these tele-callers followed up with schools, blocks, and districts to ensure that reports were delivered in a timely manner.

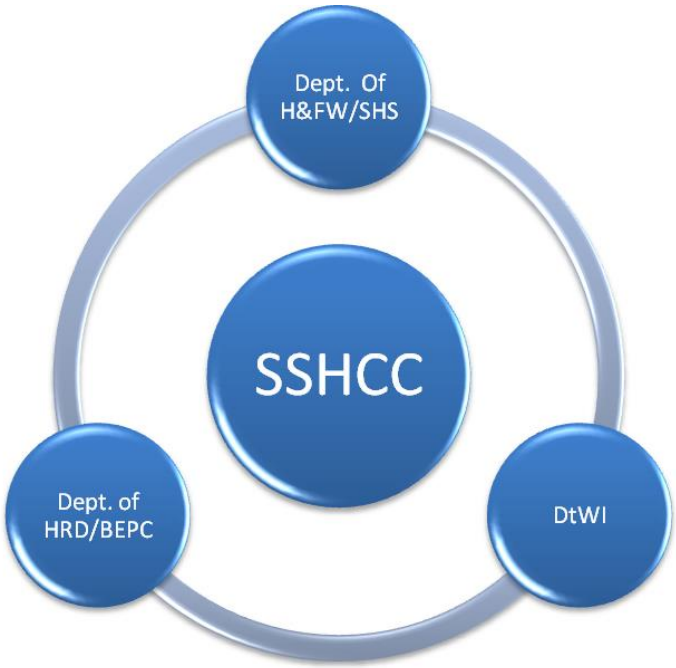
7. A detailed and program-specific Adverse Event Protocol was prepared and circulated among district and block level health officials. Headmasters were trained on their part during the training cascade. The detailed protocol, an accompanying orientation for health officials, and training of headmasters on adverse event management helped in managing approximately 70 cases of adverse events with great efficiency.

Program Governance and Management

The State School Health Coordination Committee (SSHCC) was the most important body behind the successful planning and implementation of the deworming program. SSHCC is jointly led by the Department of Health and Family Welfare, Government of Bihar, represented by SHSB; the Department of Human Resource Development, Government of Bihar, represented by BEPC; and DtWI. The SSHCC was formed at the state level to provide guidance and oversight to the entire school-based deworming program, a responsibility which it will carry in the future as well.

All three partners of the SSHCC have defined roles and responsibilities, and together the SSHCC developed a coordinated implementation strategy tailored to the strengths of each partner. Central to the implementation strategy are schools and teachers, who with minimal training and assistance from health personnel can deliver deworming medication to school-aged children.

Figure 2: State School Health Coordination Committee diagram



On November 1, 2013, the Steering Committee met to make decisions on a number of program implementation issues; at this time it decided and instructed all districts to form a District School Health Coordination Committees (DSHCC) under the chairmanship of District Magistrate (DM). The District Education Officer (DEO) from the Department of Education and the district level Civil Surgeon (CS) from the Department of Health were its primary members, while DM had the discretion to include other departments in the committee. This institutionalization of the DSHCC was intended to ease the convergence of multiple government departments at the district level and maximize successful implementation of this inter-departmental program.

Program Resourcing

The Bihar School-based Deworming Program has been primarily funded by the Government of Bihar. The SHSB provided the medical expertise and bore the cost of radio appeals, newspaper appeals, posters, additional drugs, and transportation of drugs. The BEPC printed teacher instruction sheets, reporting forms, provided BRPs and headmasters with training, and gave access to the network of schools. DtWI provided technical support by developing content for the IEC and training materials, providing professional trainers for district level training and short term district-level employees for coordination, and providing monitoring and evaluation. DtWI also bore the expense for mike announcements. DtWI was supported by the END Fund for conducting Round 3 of the program.

PROGRAM IMPLEMENTATION

Program Implementation was comprised of multiple activities which are broadly described in the following categories:

Program Management and Planning

Sri Sanjay Kumar (IAS), Executive Director-Cum-Secretary Health, SHSB convened and chaired the SSHCC meeting on November 1, 2014, after the last SSHCC meeting on December 7, 2010. Shri Rahul Singh (IAS), State Project Director-BEPC, and Smt. Priya Jha, Country Director India-Evidence Action attended the meeting along with their team members, representatives of other invited departments, and UNICEF. The group reviewed the operational plan for Round 3, identified some gaps from the last rounds, set expectations, clarified roles and responsibilities of partners, and provided broader guidelines for program implementation. The meeting took all the important decisions required at state level, thus freeing the entire implementation team to focus on ensuring that districts and blocks were adhering to the plan. While the minutes of the meeting are provided in annexure, some of the prominent decisions were as follows:

1) To avoid any impact of cold wave, the program dates were changed from 16 January (Deworming Day) and 21 January (Mop-Up Day) to 23 January and 28 January respectively.

2) Precautionary measures, adverse event management, greater clarity for teachers on their role, reference materials available for trainers and teachers, and the need to complete report collection more quickly were discussed and planned for.

3) The use of various IEC media for creating community awareness was discussed: radio appeals, newspaper appeals, and poster printing and display, communication at Village Sanitation Health and Nutrition Day (VHSND) and Village Siksha Samiti (Village Education Committee) meetings. Financial commitments were made by SHSB.

4) The training cascade structure was revised to accommodate 3 BRPs from each block instead of training all the CRCCs. Unlike previous rounds, these BRPs were made responsible for training all the headmasters of their block.

5) The report collection process was simplified by asking all the headmasters to submit a one page report to their BRPs on 29 January 2014. It was planned that BRPs and DEO office would only collect and submit those school forms at district and state levels respectively. Consolidation of data from each level was removed.

6) While BEPC agreed to print the reporting form and teachers' instruction sheet, DtWI agreed to design and provide content for these, as well as posters and other IEC materials.

7) The Adverse Event Protocol was discussed and advice given on making it more comprehensive.

8) It was agreed that ED-SHSB would write a letter to all the District Magistrates to organize/initiate District School Health Coordination Committee meetings to facilitate better convergence between health and education departments and better execution of the program.

This Steering Committee meeting sparked off the sequence of activities culminating in the successful implementation of the third round. One of the major activities was the formation and involvement of District School Health Coordination Committee (DSHCC) meetings.

All District Magistrates (DM) were required to chair the committees while District Education Officers, Civil Surgeons, and any other officers nominated by the DM would join as members. These committees were assigned to meet, review all program preparations, and ensure successful implementation. As DSHCC formation and meetings were being done for the first time, DtWI supported the process by appointing two Regional Coordinators (RCs) to coordinate with different district officials in facilitating these meetings. In the limited time only 25 of the 38 districts held the DSHCC meeting out of which only 20 prepared and shared meeting minutes. DSHCC became an institutional platform in these districts for facilitating the convergence of multiple departments and paving the way for successful implementation of the deworming program.

Once the Steering Committee decided upon expectations, roles and responsibilities of partners, and discussed major guidelines for the program, DtWI supported SHSB and BEPC in shaping the committee via an operational plan, included in annexure.

For successful implementation of the entire plan, DtWI provided support by hiring three types of short term contractual staffs; District Coordinators (DC), Regional Coordinators (RC), and tele-callers based at Patna. One DC was hired for three months in each district to work as facilitator, coordinator, catalyst, and provide support to district officials. Two regional coordinators were hired and each assigned ten districts in which to coordinate and facilitate DSHCC meetings, oversee DCs, interact with district officials in case of any delays, and communicate concerns and deviations directly to the state team. The team of tele-callers was hired to gather daily updates from district officials and DCs, keep close monitoring of preparations at all levels, and share findings with the state team.

Drug Coordination and Distribution

In Round 3, DtWI-Bihar worked in close coordination with the Department of Health and Department of Education to ensure drug availability in each school before the deworming date. Although approximately 22.4 million of Albendazole tablets were procured through WHO's global drug donation program, a shortage of tablets was identified upon review by DtWI. This was addressed in a timely fashion by SHSB. Follow-up to the Steering Committee meetings by DtWI staff and tele-callers ensured that districts' Civil Surgeons picked up drugs from the state warehouse in a timely fashion. DtWI tele-callers and DCs worked persistently in following up with district and block administration ensuring delivery of drugs to blocks and further to the schools. Post-deworming, SHSB was updated on the stock of remaining tablets. The government issued instructions to allow use of these drugs in regular existing programs. The details of the drug logistics chain is below:

Procurement

The deworming program has been using Albendazole 400mg, approved and recommended by WHO, since its inception. Unlike the earlier rounds when the SHSB procured the drugs, in this round, Bihar received the drugs from WHO's drug donation program in February 2013. The coordination for this drug donation was facilitated by DtWI. The state government raised the requirement of 22.4 million

drugs and received almost the same quantity in jars containing 200 tablets each. The requirement was calculated based on school enrollment data and included a buffer of approximately 10% to allow for breakage and the deworming of non-enrolled children and adults.

Storage and laboratory test

The drugs were safely stored in State Health Depot in Patna until November 2013. At that point, the districts began to pick up their share of the drugs from the depot. In October, DtWI had coordinated for lab testing of the stored drugs via ASCHO NIBULA INDUSTRIES LTD, an independent lab which approved the quality of the drugs.

Transport of drugs

The districts picked up drugs from the state depot, as per their requirement based on enrollment data shared by SHSB, starting in November of 2013. By December 25, 2013, all districts had picked up their drugs. The drugs picked up by the districts were further distributed among the Primary Health Centers (PHCs) by the end of 2013. Medical Officers In Charge (MOIC) were responsible to hand over these drugs to concerned Block Education Officers by January 10, 2014 who distributed them among school headmasters between January 13-19 at the block level trainings, along with IEC materials, instruction sheets, and reporting forms.

To ensure that the drug transport happened within the stipulated timeline, DCs and a team of tele-callers did rounds of coordinated follow-up and tracking with district and block level officers, and shared their daily updates with the state team. Based on these daily status updates, SHSB wrote reminder letters to the districts lagging behind in picking up drugs from the state, and also followed up at regular intervals over the phone until the drugs were picked up. Due to coordinated efforts of the DtWI team in identifying any delays or deviations and communicating the matter to the relevant officials, all the districts had picked up their drugs by December 25, with 30 districts having picked up their drugs before the deadline of December 8, 2013. These drugs were then distributed to the PHCs who handed over the drugs to BEO. All 534 BEOs had received their required drugs by the block level training.

Distribution of drugs among schools

BEO offices distributed the drugs among the school headmasters at block level trainings. In monitoring phone calls, 82% of the 354 schools contacted by DtWI tele-callers across 27 districts confirmed receiving drugs two days prior to Deworming Day. When this potentially problematic information came to light, the tele-calling team and DCs hired by DtWI contacted all the BEO offices to ensure delivery of drugs to all the schools before Deworming Day along with instructions issued from the BEPC nodal officer. Subsequent independent monitoring data (from visits to schools during Deworming Day and Mop-Up Day) shows that approximately 96% schools had received drugs by Deworming Day. This was a significant jump from the 82% polled only two days earlier.

Additional drugs

It was clear early on that due to availability of drugs in jars of 200 tablets each, there would be a deficit of 0.35 million tablets for schools if packages were distributed in these quantities. There were three visible solutions through which the deficit could be filled: repackaging the drugs in bags of smaller quantity; procuring the deficit quantity from the market; or pooling the drugs from any district having additional availability of drugs. The Steering Committee initially decided to repackage but DtWI requested for the second option, given the potential for criticism of the repackaging option in case of adverse events. While DtWI was exploring the second option to procure additional drugs from Bihar Medical Services and Infrastructure Corporation Limited (BMSICL), a surplus of Albendazole 400mg tablets was discovered in Patna district. DtWI supported the quick transportation of these surplus drugs to all the districts by January 10, 2014 with the help of DCs. The districts were to then distribute the drugs among the blocks in case any deficit was reported.

Adverse Event Protocol

Based on the expectations and guidelines of the Steering Committee, DtWI supported the SHSB in drafting a robust and comprehensive Adverse Event Protocol. The protocol was shared with all the CS and they were specifically briefed to orient the field force on the protocol. This protocol was designed in sync with the departmental protocol of emergency response. All the DCCs were also requested to ensure that protocol was being followed in case of any adverse event reported.

Training

Training and Cascade Plan

During the Steering Committee meeting, the training cascade for Round 3 was planned to be in two layers; at the district level, all the Block Resource Persons (BRPs) were to be trained and at the block level, the trained BRPs were to train headmasters or one teacher from each school in the block. While all 38 district level trainings were proposed to be completed between December 9 and December 20, 2013, block level training for headmasters was planned between January 13 and 19, 2014. The block level training was deliberately placed just a week prior to the Deworming Day to ensure better recall of the training content, which would hopefully improve the chances of adherence to the prescribed processes. Also, since the block level trainings were to be the platform for distributing the drugs, posters, teacher instruction sheets, and reporting forms among the school headmasters, it was important that this training be conducted closer to Deworming Day. The trained teachers/headmasters were to then train other teachers in their schools. To make the training cascade simple, precise, and informative three guidelines were proposed: a) training batches will not exceed 40 participants; b) each training session must be limited to four hours; and c) training must be given with the help of flipcharts which will only focus on the major deliverables from schools.

Training and reference materials

To support an effective training cascade, training and reference materials were developed by DtWI, in coordination with BEPC and SHSB. To ensure all relevant messages were passed along consistently during training at all levels of the cascade, a flipchart was developed. These were provided to all the BRPs- three flipcharts for each block. A two-page teacher instruction sheet was also developed in simple language, and a pictorial for teachers was to be used as reference material. Each teacher who

attended the training was provided with the same. The instruction sheet ensured that all schools communicated standard messages and had reference literature about deworming, community awareness messages, processes of drug administration, management of adverse events, record keeping, and report submission. While BEPC printed the teacher instruction sheet along with reporting forms for all the schools, DtWI printed the flipchart and supported the transportation of all materials to the districts, which further distributed them to the BEOs as per requirement.

District level training

DtWI hired the services of nine professional trainers to lead the district level trainings. The district trainings were led and organized by the Education Department and DCs and tele-callers kept track of each of the districts' training schedules on a daily basis. They followed up on preparation, highlighting any districts which were lagging behind to allow for corrective steps. These updates were shared with BEPC and corrective actions were initiated. All 38 districts completed district level trainings by December 28, 2013. In total, 40 district level training sessions were conducted and more than 1145 BRPs were trained across 38 districts within a span of 18 working days. Each of these training sessions was monitored by respective DtWI DCs. When the BRPs could not attend, alternative trainings were provided by either the DtWI DCs or by another trained BRP, ensuring that all blocks had at least one trained resource to conduct block level training.

Figure 3: District level training at Buxar

Figure 4: District level training at Khagaria

Block level training

The second level of the cascade training was not only a training opportunity, but was also used as a distribution point for other program materials to also be shared by the participating headmaster or teacher. The BEO office had to ensure that materials were available to both the Health and Education Departments before the training. These materials were distributed at the training among headmasters and teachers as per the requirement of their school. The continued coordination among Department of Health and Department of Education with support from DtWI ensured that all the BEO offices conducted the training only after January 13, 2014 when they received materials, including drugs. Much coordination was required to ensure that each BEO office received all the materials, as was confirmed by 449 BEO offices contacted by the tele-calling team prior to their training date. At block

level training, the most critical challenge was accommodating the large number of schools represented by headmasters or teachers (some blocks had 100 to 250 school), and managing logistics in the distribution of materials. The block level training started on January 13 and continued until the January 21, 2014. A total of 64,535 headmasters and teachers attended these trainings, and some of these were trained by the cluster coordinator or another trained headmaster.

Figure 5: One of the block level trainings in progress

DtWI did a qualitative monitoring of 25 block level trainings, spread across 19 districts, by hiring five qualitative monitors to ascertain where the trainings were held, ensure that the identified key messages were being delivered, and verify that materials were delivered among the headmasters. The major findings are shared in the Monitoring and Evaluation section under "Process Monitoring." Apart from this, each district coordinator visited four to six blocks to ascertain that the trainings and distributions were taking place.

Community Mobilization and Awareness

Community awareness is one of the critical activities in any campaign program. It contributes to the success of deworming by spreading information in community about the program, date, venue, precautions to be taken during drug administration, expected adverse cases, and any other salient features. In a large-scale program like deworming, high community awareness not only clears the initial apprehensions about the program, but also prepares the population at large to respond better to adverse cases, if they are reported. The Steering Committee decided on the following mechanisms for community mobilization and awareness, and assigned related responsibilities to different partners.

State Health Society took the responsibility of making paper appeals, airing radio appeals, printing and distributing posters, holding press sensitization meetings, and using Village Health Sanitation and Nutrition Day, more commonly known as VHSND, for spreading community awareness. BEPC took the responsibility of spreading the awareness through morning parades (Prabhat Pheri) during morning prayers and in any meetings of teachers and parents. DtWI helped both the partners in developing the content of these appeals, selecting the messages for communication, and carrying out mike announcements for two days in the city block of each district.

DtWI supported in developing the content, while SHSB finalized the design for the paper appeals. The paper appeals were made in all the leading newspapers of the state in Hindi and Urdu, identified for their large cumulative readership. These appeals appeared in newspapers on January 19, 2014, the Sunday prior to the Deworming Day to ensure that the largest share of readers knew about the program and made sure to send their children to school for deworming.

Radio appeals, used in Round 1, had already been developed. With minor revisions on date and precautions, these revised radio appeals were aired through All India Radio, accessible to distant villages across the state.

It was planned for schools to use five posters to display deworming information on their walls to raise program awareness among children and communities. DtWI supported SHSB in development of content and design of posters for Round 3 by the end of November. Due to an unforeseen time-consuming process in issuing a new contract to the printing agency by SHSB, there was a delay in the printing of IEC materials until January 10, 2014. Given this unanticipated delay, DtWI took the additional responsibilities of transporting IEC posters directly to District Education Officers who further cascaded them to Block Education Officers and subsequently to schools.

SHSB instructed all the districts to ensure that each village discussed the school-based deworming program on Village Sanitation Health and Nutrition Day (VHSND) in the month of December 2013 and January 2014. VHSND is a platform within each village where villagers meet monthly to share information, discuss, and create awareness on related issues. A script for VHSND, prepared by DtWI in coordination with SHSB, was shared with officials.

On January 18 2014, the Department of Health held a press meeting co-chaired by Sri Deepak Kumar, Principal Secretary- Department of Health; Sri Sanjay Kumar, Secretary- Health; and Sri Amrit Pratyay, Secretary Information and Broadcasting Department. Sri Sanjay Kumar informed the press about the Bihar school-based deworming program to be conducted on January 23 2014 followed by a mop-up day on January 28 2014. He also requested the media to spread awareness about the program to make it successful. While the news was not visible in many newspapers on the following day, their positive coverage and support to the program was visible when approximately 70 cases of adverse events were reported. It was seen that coverage on reported adverse event cases by media was done in a sensitized manner as they also featured proper medical attention given to the children. Major news-papers covered precautions to be taken in cases of an adverse event. This positive reporting, due largely to the media being briefed in advance of the program, helped in reducing public apprehension about deworming and contributed to better overall management of adverse events.

Schools started community awareness activities following block level trainings. Many schools organized a *Prabhat Pheri* (morning parade) which is collective march of children through a village or

nearby area, carrying posters and reciting informative poems about deworming. Teachers and headmasters informed children about the deworming, date and drugs during the morning prayers. Important announcements regarding deworming were also made in morning assembly, as it presented a good opportunity to convey the messages to all teachers and children. Children were also asked to communicate to their parents about the program. In few schools, the headmaster held parent-teacher meetings to communicate important messages about deworming. DtWI supported BEPC and District Education Officers' offices in finalizing the content of communication, which was also part of teacher instruction sheets, and in developing the slogans for Prabhat Pheri.

Figure 6: One of the Prabhat Pheri in East Champaran

It was planned that DtWI would carry out wall painting for community awareness but it was realized that posters at schools served the same purpose more efficiently. Consequently, mike announcement was done in city blocks of each districts for two days, generally January 21 and 22, 2014. The plan covered 38 districts, with recorded and approved radio appeals to be played on loud speaker using *rickshaw*. Each *rickshaw* was given a route chart, covering major places in town that attracted crowds. Mike announcements supplemented the written appeals, which only the literate could access, and the radio appeals, which were restricted by the availability of radio and the timing of broadcasts, by reaching the common public at the busiest of places without disturbing their regular work. The activity was carried out in 37 districts; only Madhepura district could not implement this due to some logistical challenges.

Deworming Day and Mop-Up Day

Preparation for Program Inauguration

January 23 2014 was planned as Deworming Day of Round 3, when all the schools were proposed to administer Albendazole 400mg tablets to enrolled children, non-enrolled children, and adults. After a gap of five days, January 28 2014 was planned as Mop-Up Day to administer drugs to children who did not receive it due to absence or sickness. Along with drug administration in all the schools, inauguration functions at state and district levels were planned to increase public awareness and ensure greater coverage by January 28 2014. This celebration was also held to inculcate a sense of achievement about the program among the officials of the Department of Education and the Department of Health at the district level. With logistical support from DtWI, SHSB planned the state level event in coordination with BEPC, which offered a primary school, Phoolwari Sarif, as the venue of the event.

In each of the 38 districts, the Department of Health and Department of Education decided to hold the inaugural function. District coordinators of DtWI coordinated with both departments in finalizing the venue, time, and guests of honor.

Program Inauguration

On January 23 2014, the program was inaugurated at an event organized at the state level which was led by the Honorable Sri. Uday Narayan Choudhary, Speaker of the Bihar State Assembly, at a school in Phulwari Sharif block of Patna district. At the event, Mr. Amarjeet Sinha, Principal Secretary, Department of Education, addressed teachers and children on the benefits of deworming and the importance of health, hygiene and sanitation. DtWI team members including the Country Director, other senior officials from Departments of Health and Education, development partners such as UNICEF, NIPI, and Pathfinder, and media representatives also attended. In addition, 36 districts held district level inauguration programs; the District Magistrates in six districts presided over these programs. These events were very well captured in local newspapers and likely impacted the coverage on Mop-Up Day due to enhanced program visibility.

Figure 7: Honorable Speaker Sri Uday Narayan Choudhary inaugurating the program at state

Figure 8: Principal Secretary-Department of Education, Sri Amarjeet Sinha with children at Inauguration

Figure 9: DM Inaugurating the program at E. Champaran district

Figure 10: DM Inaugurating the program at Bhagalpur district

Deworming Activities at Schools

Deworming was conducted in all schools on January 23 2014. Based on the feasibility of catering to different numbers of children, the schools made prior arrangements to designate one classroom or a separate space for deworming all the children in one go. Nevertheless, schools were expected to follow protocol for deworming related activities. Schools had to ensure for the following on Deworming Day: arrangement of potable clean water and glasses; two spoons for crushing tablets; a table and chair; availability of a well-ventilated and cool place; contact details for nearest Primary Health Centre

(PHC), Medical Officer In Charge (MOIC), and Auxiliary Nurse and Midwife (ANM); attendance register(s); and pens. Before the drug administration started, schools had to ensure that all the children had their mid-day meal and no one had an empty stomach. Non-enrolled children and enrolled children of those schools not having mid-day meals were notified in advance by their headmaster to have a meal at home before Deworming Day. Children who had not eaten or were sick were identified and separated from the group receiving treatment. The rest of the children were given deworming tablets by the designated teacher, who ensured that the tablet was chewed and swallowed. A tick was marked against the child's name in the attendance register. Ticking in the register to keep count of children dewormed on Deworming Day ensured that no child was given the drug again. At the end of the day, a designated teacher was required to submit the attendance register, with numbers of children dewormed, and remaining tablets to headmasters. Headmasters in the training were informed about the possibility of mild adverse events and requested to escalate any case of serious nature to the concerned ANM and MOIC.

On January 28, the same process was followed with a slight variation: First, teachers would identify children with no ticks from the register and only give drugs to them. Secondly, after the child had chewed and swallowed the drug, teachers would place a double tick against the child's name in the register.

Adverse Event Management

On Deworming Day, approximately 70 cases of mild adverse events were reported across the 38 districts, out of which 45 were reported from three districts in particular: Nalanda, Gaya, and Jamui. The common symptoms in these cases reported were headache, vomiting, nausea and stomach ache. The Department of Health, at all levels, exhibited favorable coordination and timely medical care in cases reported. On the following day, the media made the public aware of these cases and also that mild adverse symptoms were a possibility. They also emphasized the importance of deworming to tackle the prevalence of worms and resulting anemia. A comprehensive Adverse Event Protocol, sincere coordination between block level and district level health officials, and awareness by media about the program were instrumental in successful management of adverse events.

MONITORING AND EVALUATION

Understanding program reach and quality by sticking to the prescribed processes is a key component of a successful deworming intervention. DtWI monitors and evaluates each program round in three ways: (1) process monitoring, (2) coverage reporting and (3) coverage validation. Process monitoring evaluates the adherence to the guidelines and time plan while implementing different processes. Coverage reporting measures the program's success in reaching the target population by compiling the data received from schools. Coverage validation is an ex-post check of accuracy of the reporting data, and is conducted by DtWI-trained personnel after deworming.

Process Monitoring

In its attempt to evaluate the adherence of each process to guideline and time plan, DtWI supported a two-way monitoring strategy; a) Telephone monitoring and cross verification, and b) Physical verification by visiting the sites, schools, and training venues.

a) Telephone monitoring and cross verification

There was a team of six tele-callers who made calls to each District Program Manager (DPM) to confirm that district had picked up the drugs, and the date or proposed date of dispatch to blocks. DCs were to update on the distribution of drugs among PHCs and transportation to BEO offices when the tele-callers confirmed with PHCs about the receipt of drugs. In the same manner, confirmation calls were made to each DPO on receipt of posters, teacher instruction sheets, and reporting forms. The BEO offices were called one or two days prior to their proposed block level training date and confirmation was sought on receiving not only the drugs, but also posters, reporting forms, flipchart, teacher instruction sheets, and training in sufficient numbers to distribute among all the schools within the block. All the 449 BEO offices spread over 36 districts, when contacted immediately before their training dates, confirmed the receiving of sufficient drugs, training, flipchart, teacher instruction sheet, posters, and reporting forms. These calls were made from January 6-16 2014. Once the BEO offices confirmed to the DCs that they had conducted the training, this was immediately shared with the tele-calling team; calls were made to 354 schools spread over 27 districts, and 84% confirmed receiving training but only 74% of the schools could correctly identify the Deworming Day, indicating a loss of information since training. 82% confirmed receiving drugs, 76% confirmed receiving reporting form, 72% receiving teacher instruction sheets, and 74% receiving posters. These calls were made between January 15 and 18 2014. This feedback was immediately shared with state level and district level officials for taking corrective measures to ensure that gaps were filled by January 23. In a coordinated effort, the tele-calling team and DCs contacted all the BEO offices, shared the updates, and reinvigorated action for filling the gap, which was visible on Deworming Day.

b) Physical Verification

Training

All 40 district level training sessions were monitored by the DCs, specially trained for this monitoring and equipped with monitoring forms. All the training participants took a test consisting of 8 questions at the end of the training. There were more than 1,145 participants in this training and 968 of them filled and submitted the back test. The DCs' monitoring data was indicative of a very high quality district level training which was confirmed by the 98% accuracy in the answers of participants taking the test.

Block level trainings were qualitatively monitored by five trained monitors with the help of a training monitoring form. They monitored 28 training sessions in 25 blocks across 19 districts of Bihar. It was noticed that due to availability of flipcharts, the loss of content was reduced and trainers actually discussed all or most of the 15 key messages identified when they used a flipchart (compared to fewer without the chart). The biggest challenge in the training appeared to be the engaging of the participants by the block level trainers during the training. Given that these block level trainers were not necessarily professional trainers, this is not surprising.

Deworming Day and Mop-Up Day Activity

DtWI hired 125 independent monitors through a reputed agency to conduct an evaluation of the deworming program across the state. The objective of independent monitoring is to determine whether the training and operations tools dispensed before the deworming program are functioning effectively at the ground level. Of the total 537 blocks, 100 blocks were covered under independent monitoring. A detailed training was held by DtWI's team for two days to ensure that these monitors were equipped with the necessary knowledge to conduct evaluations effectively. The monitors were subjected to a post-training test thereafter and only those monitors who displayed the adequate level of understanding of the process were selected to act as DtWI's independent monitors. These 125 chosen monitors visited 250 schools in all, 125 on deworming day and 125 on mop-up day, to conduct a thorough monitoring of the deworming program.

Process monitoring through independent monitors covers six broad areas as illustrated by the following flow chart.

Figure 9: Areas covered by independent monitoring

The independent monitors conducted process monitoring through a three-step approach on Deworming Day and Mop-Up Day:

The first step in the process consists of interviews with the school headmaster, to gauge the level of preparation and awareness in the school. This interview includes questions about whether the school had attended the official training, whether the school is actually conducting deworming on the day, if the drugs had been received by the school and the headmaster's knowledge about the date of submission of S forms.

The second step involves observation of the deworming process in randomly pre-selected classes chosen by DtWI through a process of simple random sampling. This step enables the monitor to

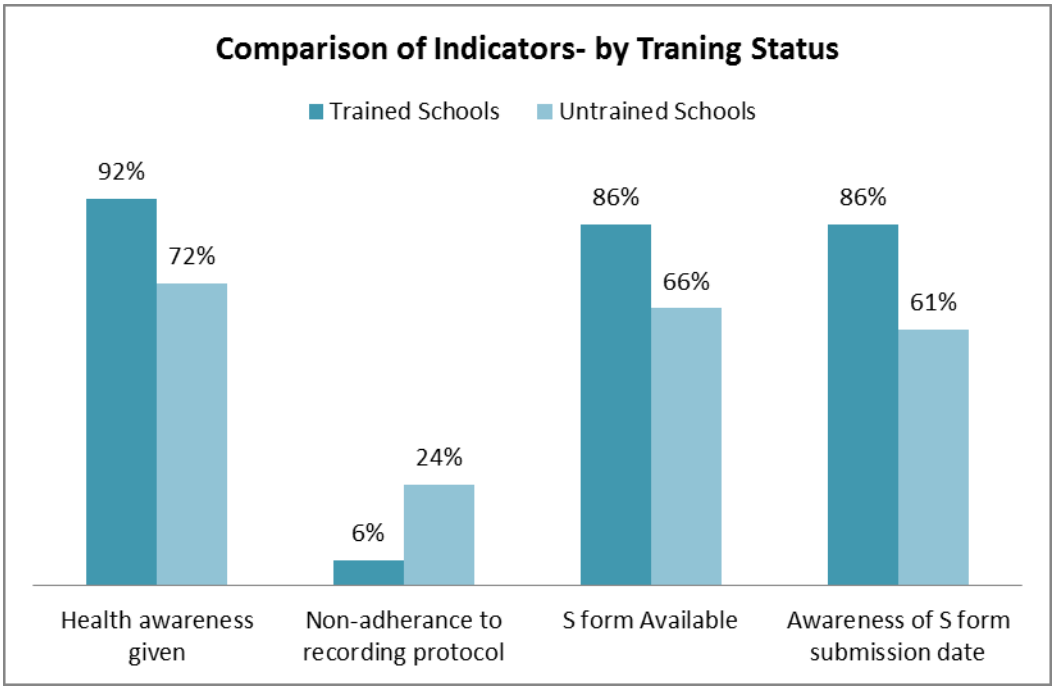
physically verify important program processes about whether the teacher is giving health information about deworming, the availability of potable water, compliance with recording protocol, and so forth. In addition to the monitor's physical observations, they also interview the teacher conducting deworming. This is the second level of verification of the information given by the school headmaster. The monitors question the teacher on their level of deworming training and awareness.

In the third step, the monitors are instructed to go to a second class (also chosen by DtWI beforehand) and interview a child. The second class, as well as the child's roll number, is determined by DtWI beforehand using random sampling. This step acts as a third level of verification because monitors ask the child about whether they had, in fact, received medicine on that day. They also interview the child about whether the teacher gave any health education before administering the tablet. Moreover, the child interview also consists of questions about deworming program awareness to determine if the children were aware of deworming, and if so, how they gained this awareness. While the detailed results of all areas of process monitoring conducted among 250 schools are shared in Annexure 2, the majority of results indicated an impressive level of adherence to correct deworming processes. The findings are as follows:

- Deworming was observed by monitors in over 90.2% of the schools visited, and verified by interviews with children. Approximately 90.7% of children interviewed had been dewormed on either Deworming Day or Mop-Up day.
- 95% schools reported that they received the drugs for deworming by Deworming Day.

However, there were areas that were identified as needing improvement for the next round. These included the following:

- Reporting forms were available in only 80% schools by Mop-Up Day, while the instruction sheet for teachers was available in only 71.6% of the schools. This part of the distribution cascade will need to be addressed for the next round.
- The teacher interviews suggested a lack of awareness about the possibility of occurrence of adverse events. 44.5% of the teachers who were interviewed did not think there could be any adverse events due to the administration of Albendazole. This point needs to be emphasized in future official trainings to ensure that the teachers are equipped to manage any such adverse cases, in the unlikely event that it does happen.
- Only 77% of schools had teachers/headmasters who attended the official block level training. This has profound implications, as the disparity between the quality of program in schools which attended training and those which did not, is significant. The process monitoring data suggests that indicators such as effective dispersal of health awareness to students, compliance to recording protocols, awareness about reporting form submission etc. was much higher in schools that were trained. This is depicted in the chart below:



Coverage Reporting

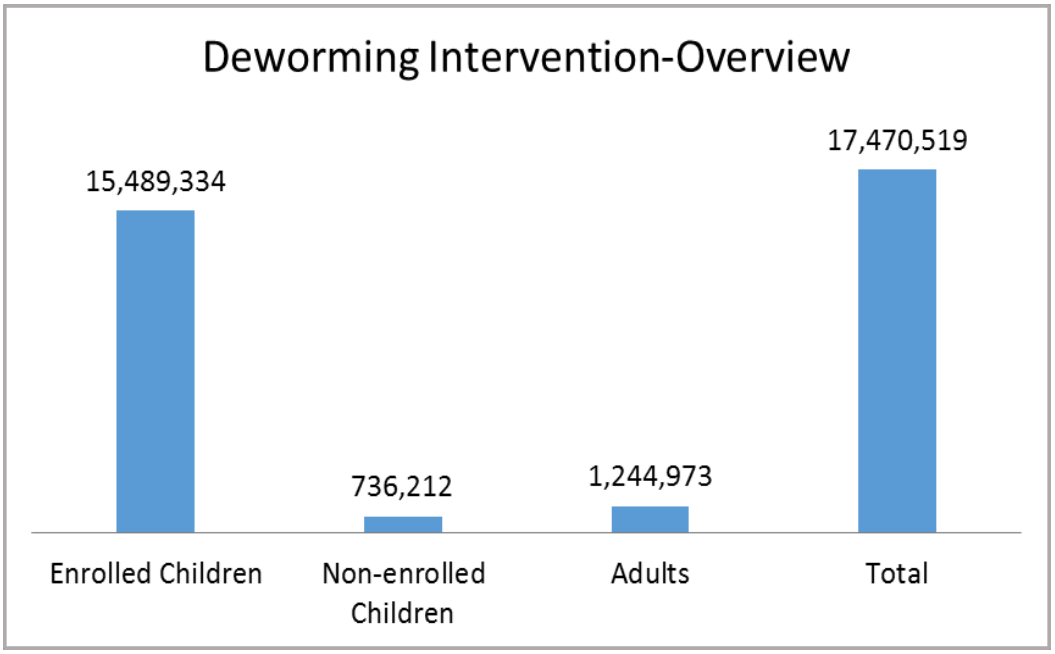
Coverage reporting is an integral part of any program. It evaluates the approximate numbers of beneficiaries of the program, a crucial component for understanding the success of the implementation.

In Round 3, each school was supposed to fill a one-page, simple school summary form (Form S), capturing only the essential details on the school such as total enrollment, total number of dewormed children by date and by enrollment status, number of adults dewormed, availability of drugs, drug usage and wastage, remaining drug stocks and contact details of the headmaster. In order to ensure that coverage reporting by the schools is accurate, every participating school was instructed to follow a special recording protocol for deworming. Every teacher was required to put a single tick mark (✓) next to a child's name in the attendance register if they had consumed the tablet on Deworming Day. The teachers were instructed to put a double-tick mark (✓✓) next to a child's name if s/he had been administered the tablet on Mop-Up Day. These tick marks are intended to be the basis for the numbers reported by every school in the S forms. Schools were supposed to provide the number of enrolled children dewormed by counting the single and double tick marks in the attendance registers. In addition, the provision for dewormed non-enrolled children was to be maintained along with the details of adults dewormed. School headmasters were supposed to submit the filled summary form to BRP by January 30 2014. Blocks were to submit all the collected forms, without any consolidation or compilation, at DEO office by February 5 2014. Districts were instructed to submit these forms at BEPC by February 20 2014.

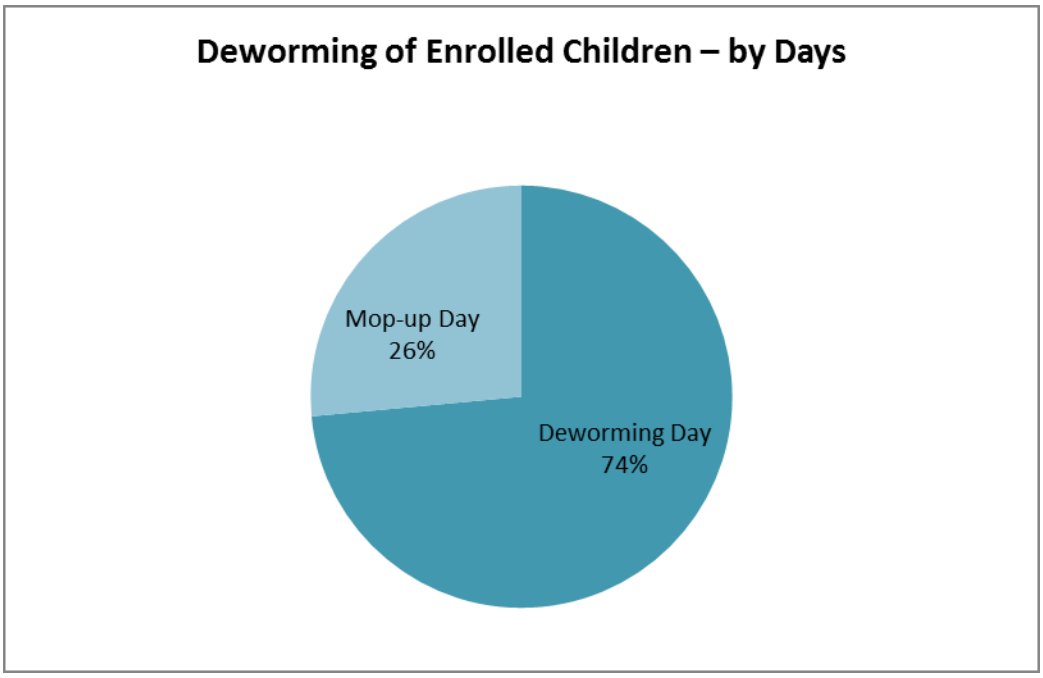
Having faced a severe challenge in report collection during the earlier rounds, timely reporting by schools was assigned high importance by the Steering Committee and operational plan; form collection was to be completed by February 20 2014, a huge task considering that last round took ten months to complete the task. But, to make it possible the following steps were planned and taken:

- Simplification of reporting form by limiting it to a single page containing only 23 fields to be filled at schools
- Simplification of consolidation process by replacing data consolidation at block and district level with only collection of forms and submission at higher level
- Emphasis laid on the importance of timely form submission during the all trainings
- Timely and regular communication to DCC, DEO, and CS for timely form collection from SHSB and BEPC
- Coordinated, multiple, and rigorous telephone and physical follow-ups with BEO and DEO offices by the team of tele-callers, DCs, and RCs until the forms were received by the state
- Sharing of report collection status on regular intervals and specific intervention by BEPC to ensure the report submission.

While not every one of the 70,716 schools, 534 blocks, and 38 districts was able to meet the timeline, the result of this combination of strategies was that the entire form collection was completed by the end of March 2014, within two months of deworming. This was a significant achievement in comparison to last year, when this process took 10 months. In total, 64,724 schools out of the 70,675 targeted schools submitted their summary forms. To ensure speed of data entry after form collection, DtWI also modified its form checking process to eliminate excessive manual checking of the forms, saving DtWI an approximate two months in form processing time. Further, DtWI changed its prior strategy of relying on a single and small data entry partner, and selected a reputed agency with significant experience in large scale surveys across India to do data entry. This data entry partner subsequently dedicated significant data entry resources to Bihar form entry. The result of this modified data cleaning and data entry process was that the coverage data was available to share from the 64,724 schools within 3 months of the deworming date. This cleaned data indicated that 16,225,546 children were dewormed in Bihar out of which 15,489,334 were enrolled children and 736,212 were non-enrolled children. The program targeted 19,165,588, children. **Thus, the program coverage percentage inclusive of non-enrolled children came to 84.5%.** If we only look at the enrolled coverage, the program coverage was 80.8% of the target population. In addition, the Bihar program also led to deworming of 1,244,973 adults. The graph below gives the summary of the program coverage.

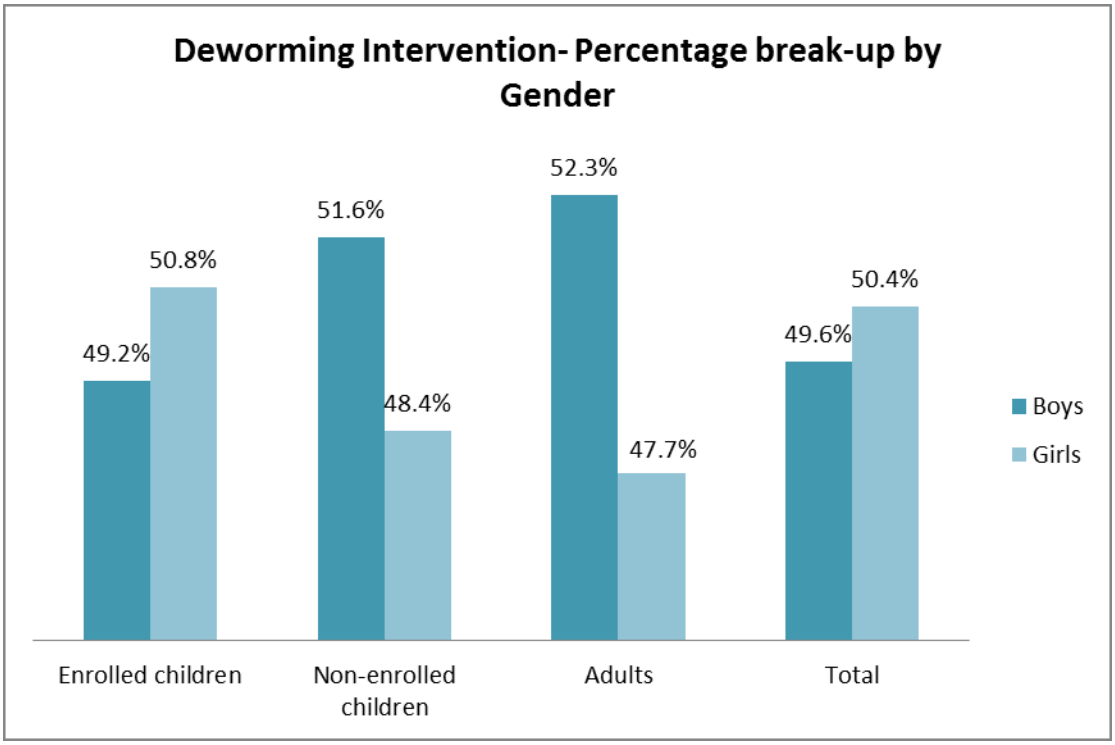


As mentioned above, 15,489,334 enrolled children were dewormed out of the total of 19,165,588, children in the targeted schools. The majority of these enrolled children were dewormed on Deworming Day and about one quarter received the tablet on Mop-Up Day. 11,387,609 enrolled children received the deworming tablet on Deworming Day, whereas 4,101,725 were dewormed on Mop-Up Day. The chart below gives the percentage break-up between Deworming Day coverage and Mop-Up Day coverage.

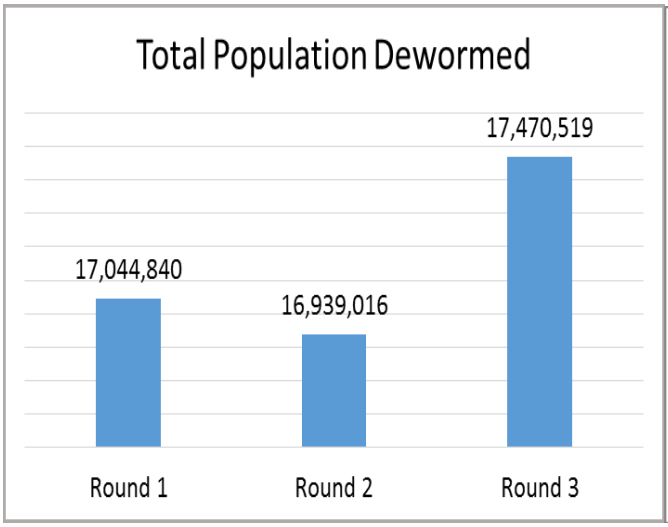


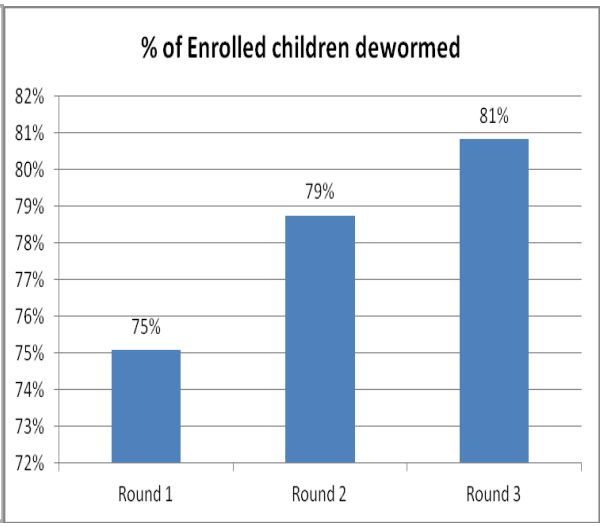
The following table gives the percentage break-up of the gender distribution of the Bihar School-based Mass Deworming Program, 2014. The percentage share of females exceeded that of males in the category of enrolled children by 1.6%, but in the category of non-enrolled children and adults, the

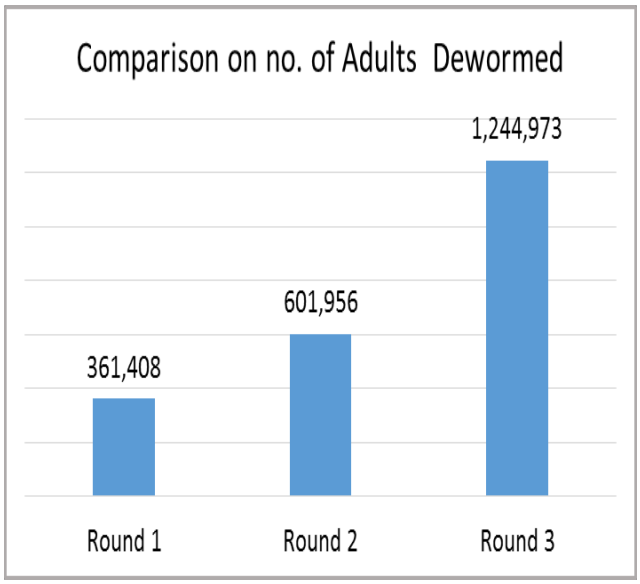
percentage share of males was higher than that of females. However, the total share of females still exceeded that of males, owing to the larger absolute number of females dewormed. The total number of females (enrolled+ non-enrolled+ adults) stood at 8,813,709 and the total number of males (enrolled+ non-enrolled+ adults) is 8,656,810.

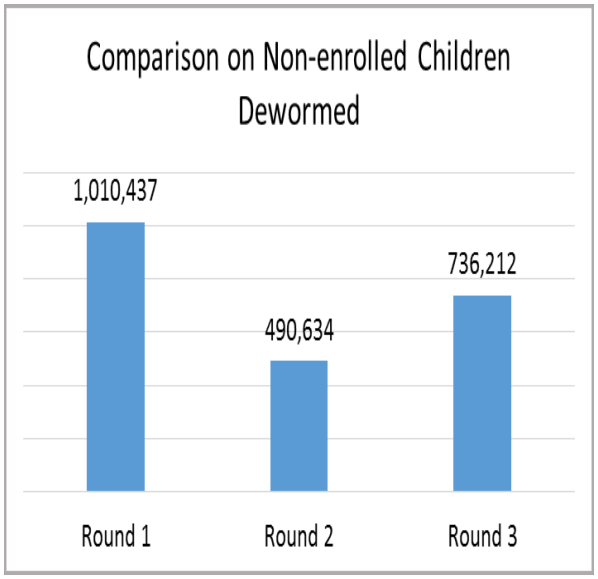


A historical comparison on coverage of the program clearly indicates that not only did Round 3 achieve the highest absolute coverage, but it also outperformed other rounds in deworming of enrolled children and adults. Comparative graphs on total population dewormed, percentage of enrolled children dewormed, number of adults dewormed, and number of non-enrolled children dewormed, across the three rounds are shared below suggesting the outstanding achievement of this round:









Coverage Validation

Coverage validation is an independent assessment of program results and recording, and was conducted by independent monitors within a week of Mop-Up Day. The main objective of coverage validation is to check the accuracy of the deworming data reported by schools. This is measured by comparing the numbers reported by schools in school summary forms with the figures in their attendance registers. For this purpose, 125 hired independent monitors visited 750 schools (6 schools per monitor) to verify the reporting numbers in the S forms vis-a-vis the cumulative number of ticks in the registers across all the classes of the school. In the monitored school, each monitor was instructed to visit every classroom and manually count the number of single tick marks (indicating children dewormed on Deworming Day) and double tick marks (indicating children dewormed on Mop-Up Day). Once this activity was complete, the monitors asked the school headmaster for the S forms and noted down the Deworming Day coverage numbers and Mop-Up Day coverage numbers from the S form. This activity provides a framework to calculate the level of inaccuracy in the reporting data by comparing the ticks with the numbers reported in S forms.

The data from these 750 schools was analyzed to calculate several coverage parameters pertaining to state–level, block-level, and school-level data accuracy. The details of these parameters are provided in Annexure 2. A state level verification factor was calculated from the data, and it was found to be 0.9215, which is within the range of acceptable verification factors for MDA programs. This state level verification corresponds to an overall data inflation rate of 8.5% for the state of Bihar. The data accuracy parameters also highlighted three main aspects of data reporting that need to be addressed:

- Non-compliance of recording protocol: 10.2% of the schools did not follow the ticking procedure explained during block-level training at all (i.e., not a single class in the school ticked the names on attendance registers to record children dewormed). These schools did not contain *any* ticks in the

attendance register. This is one of the primary causes of the state inflation rate of 8.5%, as our later analysis indicated.

- Inaccuracy among compliant schools: Even schools which followed the protocol of ticking had inaccuracies in data reporting. In 21.6% of compliant schools, the number of ticks did not match with the S form numbers for Deworming Day. As mentioned above, the inaccuracies ranged from cases of widespread under-reporting (inflation rate <0%) to cases of widespread over-reporting (inflation rate > 0%).
- In the subset of schools which followed the protocol of ticking, inflation rate per school varied widely from -86.5% (indicating severe underreporting) to 146.5% (indicating severe over-reporting). However, the average inflation per school, when considering only the subset of schools that ticked registers, was only 0.96%. Therefore, while the inflation rate varied widely from school-to-school, the average school level inflation for Bihar was less than 1%, *when schools followed the recording protocol*. This is an important lesson because it indicates that when school follow a recording protocol, reporting is far more accurate. Note that the average school inflation for schools that followed the recording protocol was considerably lower than the state level inflation rate of 8.5%, when all sampled schools (whether they ticked or not) were taken into account. The higher value of state inflation rate indicates that a significant portion of the state level inflation could only be due to schools not ticking their attendance registers at all during deworming. This suggests that in future rounds of deworming in the state, the process of recording the dewormed will need to have greater emphasis and/or require modification.

KEY INNOVATIONS AND LESSONS LEARNED

Round Three

Key Innovations-

The following key innovations were planned for Round 3:

1) **Reporting Cascade**: Forms were simplified, and data consolidation at multiple levels was removed. Thus, school forms made their way back up the cascade, to be picked up at the block and district levels by DtWI staff. In addition, there was a strong push from the state (in the form of issuance of formal letters and the setting of strict timelines), to ensure that form return was as fast as possible. **Tele-callers and District Coordinators from DtWI also followed up to speed up the return. Revisions to the form cleaning process and data entry process also sped up the return.** This resulted in considerable speeding up of the cascade, such that school forms had been collected by March end, and coverage data was available to share with the government within three months of deworming.
2) **The use of tele-callers and district and regional coordinators to monitor and manage the program:** In this round, the number of district coordinators was increased to match the number of districts, as opposed to 19 from the previous round. These district coordinators and two regional coordinators monitored and managed the district level activities, providing feedback and updates to state team from each district and blocks, and took corrective action where necessary. In addition, tele-callers supported through calls to districts, blocks, and randomly selected schools to assess the training, drug, and IEC cascade. Post deworming, the tele-callers and district and regional coordinators followed up at all levels, to ensure that the forms were returned as planned.
3) **Formation of District School Health Coordination Committee:** All District Magistrates (DM) were required to constitute the committee under their chairmanship while DEOs, CSs, and other nominated

officers would be members. These committees were assigned the task to meet, review preparations for the program, and ensure successful implementation. As DSHCC formation and convening its meeting was being done for the first time, DtWI supported the process through two Regional Coordinators to coordinate with district officials in facilitating these meetings. These committees facilitated coordination of the different departments and decentralized management to deal with deworming program implementation.

4) **Use of existing government platform of VHSND:** The use of different IEC materials (media mix) for community mobilization, such as radio and newspaper appeals, posters, IPC and group meetings communicating key messages on VHSND and through VSS, enhanced awareness about the program and contributed to state ownership as many frontline workers were actively engaged in the entire process for dissemination.

5) **Adverse event protocol:** An adverse event protocol was drafted and shared with the state government to streamline the state's response on any adverse event reported. This was a crucial learning in the current round and also prepared state, health and education functionaries to respond in a timely manner and build ownership towards the program at large.

Lessons Learned

DtWI has identified the following learnings and areas for improvement for the next round:

1) **Streamlining coordination between state and district levels**: A key to the successful implementation of the school-based deworming program is effective coordination and convergence of the Department of Health and Department of Education at the state, district and block levels. Prior to re-energizing the SSHCC (State School Health Coordination Committee), which is a convergence body with all the departments represented, it was difficult to get timely inputs and decision-making from the relevant government stakeholders. Organizing Steering Committee meetings at both the state and district level was a critical step to facilitate coordination and speed up decisions that had significant impact on the planning and program execution along with resting ownership at the appropriate levels. DtWI engaged with the district in a more structured manner and will continue this for future rounds. Expanding the technical assistance from DtWI to include Regional Coordinators (each managing 8- 10 districts) through the year will be an effective strategy for sustainability, rather than a once-a-year, touch-and-go approach. Coordination and facilitation of program guidelines at the district level will encourage greater engagement and shared responsibility in a more structured manner.

2) **Community awareness:** To expand its reach to populations residing in remote areas of the state, the program strived for a wider scale media campaign that included a variety of communication channels customized to the state's social, economic and cultural identity. Key messages around STH prevalence, negative health effects, and positive benefits of deworming were propagated through media to reach the target population. In the long term, to have a more visible program impact it is important that coverage be increased and adverse events kept to a minimum reported through more efficient management. Round 3 made significant strides in this respect, and going forward additional efforts will be made for sensitization at the district level, ensuring that government officials are well-prepared to respond to media queries and reporting.

3) **Reporting formats:** Keeping in mind practical constraints in reporting by school teachers and headmasters, in Round 3 a more pragmatic approach was taken in structuring the reporting formats to make them simpler. Going forward, emphasis will be placed on proper filling of forms at the trainings of teachers and headmasters so that there are minimal inconsistencies in reporting forms. DtWI plans to explore electronic methods of data collection, which could reduce dependency on paper based forms currently in use.

4) **Report collection:** With the national general elections planned for April and May, it was a challenge to collect all the reporting forms in time from the field. To mitigate this, engagement of the RCs through the post-deworming period was critical. Any districts with pending forms were followed up with block officials to ensure the collection was completed at the earliest possible time. The integrated approach targeted speedy collection of forms and resulted in an overall reduction of lag time, allowing return of 91.5% of forms within 3 months.

5) **District coordination committee meetings:** Although the committee at district level ensured greater coordination and timely executions of strategic decisions, there still exists a scope for refining the process. Frequent reshuffle of district magistrates, civil surgeons or both often posed a major challenge in organizing meetings and collecting signed minutes afterwards. On certain occasions, authenticity of minutes was challenged due to absence of signature of previous officers. Being the first round to include these meetings, it was a crucial learning period but this process will be further improved in future rounds.

WAY FORWARD

Round 3 of Bihar's School-based Deworming Program successfully provided deworming treatment to 17,470,519 (17.47 million) people; out of which 15,489,334 (15.49 million) were children enrolled in school accounting for approximately 81% of total enrolled children; 736,212 (0.74 million) were non-enrolled children, and 1,244,973 (1.24 million) were adults. The most significant achievements from Round 3, compared to the previous two program rounds, was the establishment of new benchmarks in terms of the number of people dewormed, the total number of adults dewormed, and the percentage of enrolled children dewormed.

This successful round of school-based deworming in Bihar in the month of January 2014, and the significantly faster coverage reporting within a time-bound schedule, has helped established DtWI as a credible technical assistance partner. It has catalyzed an integrated approach to large-scale programs and is supporting institutionalization of deworming efforts in the state with other flagship school-based health programs. Bihar School-based Deworming is now planning to take strategic steps towards integration and strengthening of some of the recently launched school-based programs, such as, Weekly Iron Folic Acid Supplementation (WIFS) and Childhood Anemia Control (CAC), prioritizing the deworming agenda for preschool and school children, on the back of the successes of the current program.

Finally, DtWI is engaged in exploring the inclusion of preschool children in the deworming efforts of the state, through the collaborative efforts with other stakeholders working with similar target groups.

[In attached files]

ANNEXURE 1: INDEPENDENT MONITORING DATA ANALYSIS

ANNEXURE 2: INDEPENDENT MONITORING DATA TABLES

ANNEXURE 3: REPORTING FORM

ANNEXURE 4: COMMUNITY AWARENESS MATERIAL

ANNEXURE 5: PRESS COVERAGE

ANNEXURE 6: CASE STUDIES

ANNEXURE 7: ADVERSE EVENT PROTOCOL

ANNEXURE 8: MoM of STEERING COMMITTEE MEETING