



**Punjab Deworming Initiative
Policy & Institutional
Framework
(2021-2024)**

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Acronyms

BECS	Basic Education Community Schools
DEA	District Education Authority
DGHS	Directorate General Health Services
DHA	District Health Authority
EMIS	Education Management Information System
HMIS	Health Management Information System
IDEAS:	Institute of Development & Economic Alternatives
IEC:	Information, Education & Communication
IHN:	Indus Health Network
IRD:	Interactive Research & Development
JRSM	Joint Request for Selected Medicines
IRMNCH & NP	Integrated Reproductive Maternal, Newborn and Child Health & Nutrition Program
LHS	Lady Health Supervisor
LHW	Lady Health Worker
LoI	Letter of Intent
M&E:	Monitoring & Evaluation
M/o:	Ministry of
MDA:	Mass Drug Administration
MoU	Memorandum of Understanding
MSNC	Multi-Sectoral Nutrition Cell
NCHD	National Commission for Human Development
NHSR&C	National Health Services, Regulations & Coordination
NTD	Neglected Tropical Disease
PSPU	Policy and Strategic Planning Unit
P&SHCD	Primary and Secondary Healthcare Department
SED	School Education Department
SDGs	Sustainable Development Goals
SH & NP	School Health and Nutrition Program
SH & NS	School Health and Nutrition Supervisors
STH:	Soil-Transmitted Helminths
SO	Social Organizer
ToR:	Terms of Reference

1. Background

The World Health Organization (WHO) estimates that over 1.5 billion people are infected globally with soil-transmitted helminths (STH), with 835 million children in need of treatment. WHO estimates that 9.3 million preschool and 21.7 million school-age children need deworming treatment in Pakistan alone¹, with 43% of the children in the Eastern Mediterranean Region at-risk for STH being in Pakistan. Pakistan is among the top-10 highest burden countries for STH globally, and the only high burden country that has not scaled up deworming of at-risk school-age children.

STH infections result from poor sanitation and hygiene conditions and tend to have highest prevalence in school-age children (5-14 years of age). The consequences of chronic worm infections in children are both widespread and debilitating. Worm infections interfere with nutrient uptake, can lead to anemia, malnourishment and impaired mental and physical development and pose a serious threat to children's health, education, and productivity. Infected children are often too sick or tired to concentrate at school, or to attend at all. STH exacts a clear toll on human capital, hindering economic development, yet not all at-risk children are currently treated.

The WHO's recommended strategy is to control morbidity caused by STH infections through mass treatment of at-risk populations using safe and effective deworming medicines. At-risk populations defined by WHO are the following groups living in areas where prevalence of STH exceeds 20% in the particular population group: young children (12-23 months of age); preschool children (24-59 months of age); school-age children (5-14 years of age); non-pregnant adolescent girls (10-19 years of age); non-pregnant women of reproductive age (15-49 years of age)².

Currently, in Pakistan, preschool children are treated through the 'Maternal, Newborn and Child Health' programs. Pakistan's Maternal and Child Health Policy and Strategic Framework (2005 – 2015)³. However, at-risk school-age children in Pakistan, have not been treated at scale prior to 2019.

This **Policy and Institutional Framework** sets out the overall strategy for a deworming program in the five at-risk districts of Punjab (Attock, Chakwal, Jhelum, Gujrat and Rawalpindi⁴) and provides a framework for program implementation and coordination across government departments and administrative levels.

Treating school-age children at school provides an easy way to target and treat large numbers of children through existing infrastructure, reaching them where they already are and leveraging higher numbers of teachers relative to health workers for drug administration. Targeting school-age children through school-based deworming is considered a development "best buy" due to its impact on educational and economic outcomes coupled with the relatively low cost of delivery.

On 29th November 2018, an official letter was sent by Chief Health, Planning Commission to Member Health, Nutrition and Population (HNP), Planning and Development Board for the initiation of a deworming program in Punjab. In response to that letter multiple consultation sessions were held with relevant stakeholders and on 19th August 2020 the notification of a Working Group for the Punjab Deworming Initiative was issued. The Working Group will primarily be responsible for program oversight and strategic leadership including the establishment of this policy document and ensuring progress towards overall goals.

¹World Health Organization. (2016). Soil-transmitted Helminth Infections (PCT databank). http://apps.who.int/neglected_diseases/ntddata/sth/sth.html

²Preventive chemotherapy to control soil-transmitted helminth infections in at-risk population groups. World Health Organization (2017). <http://apps.who.int/iris/bitstream/handle/10665/258983/9789241550116-eng.pdf?sequence=1>

³ <http://origin.who.int/pmnch/events/2007/pakistanpres1904.pdf>

⁴https://files.givewell.org/files/DWDA%202009/DtWI/Evidence_Action_Baseline_Survey_Report_of_Soil-Transmitted_Helminths_Prevalence_in_Pakistan_Summary.pdf

Technical assistance partners including Interactive Research and Development Pakistan (IRD Pakistan), Indus Health Network (IHN) and Evidence Action are currently providing comprehensive technical assistance to the Punjab Government to plan, implement, and monitor a school-based deworming program in at-risk districts. This assistance will be time-bound and dependent on availability of external funding. Together, these three organizations have extensive experience to support the government: IRD Pakistan works in close collaboration with health and education ministries to manage health intervention programs across Pakistan; IHN focuses on creating excellence-driven, comprehensive, compassionate, free of charge and replicable healthcare system accessible to all; and Evidence Action has an established track record of supporting ministries of health and education in countries in Asia and Africa to launch and strengthen school-based deworming programs.

2. The Need for Deworming in Punjab

IRD Pakistan, IHN and Evidence Action, together with the Institute of Development and Economic Alternatives (IDEAS) and WHO, collaborated with Pakistan’s federal and provincial governments to carry out the first nationwide STH prevalence survey amongst school-age children in 2016 across ecological zones. The data collected indicates that STH is not widespread throughout the country; it is mostly confined to northern areas, with much of the southern region of Pakistan having very low levels of infection, with the notable exception of the vicinity of Karachi (see Figure 1).

Specific to Punjab, out of the total 36 districts in Punjab, there are no high-risk STH districts ($\geq 50\%$ prevalence⁵) in the province, 5 moderate-risk STH districts ($\geq 20\%$ to 50% prevalence) and 31 low-risk districts ($< 20\%$ prevalence). According to the WHO STH treatment strategy, moderate-risk districts are to conduct mass treatment on an annual basis for all at-risk target populations, while low-risk districts do not necessitate treatment (see table 1 and figure 2).

Within the 5 moderate-risk STH districts in Punjab there are an estimated 12.7 million people at-risk for STH of which **3.65 million school-age children (5-14 yrs.) are in need of mass treatment**, regardless of whether they attend public schools, private schools, religious schools, or are not enrolled in school.

The **intensity**⁶ of STH infection is an important health indicator as moderate and heavy intensity infections are associated with significant morbidity in the affected children. Following the WHO classification of intensity of infection, the majority of STH infections across Pakistan are of light intensity.

Table 1. STH endemicity level of districts in Punjab based on baseline prevalence mapping, 2016

Category/ Prevalence of STH infection	No. of districts per prevalence category in Punjab	WHO STH Treatment Strategy per prevalence category
High-risk district $\geq 50\%$ prevalence	0	Treat all SAC (5-14 years, enrolled and non-enrolled) treated <u>twice a year through mass drug administration (MDA)</u>
Moderate-risk district $\geq 20\%$ and $< 50\%$	5	Treat all SAC (5-14 years, enrolled and non-enrolled) treated <u>once a year through mass drug</u>

⁵Prevalence of infection is the proportion of persons in a population who have a particular disease at a specified point in time.

⁶Intensity of infection is a measure of the number of worms infecting an individual. WHO have three classifications of intensity of STH infection: light, moderate and heavy.

prevalence		administration (MDA)
Low-risk district <20% prevalence	31	No mass level treatment necessary

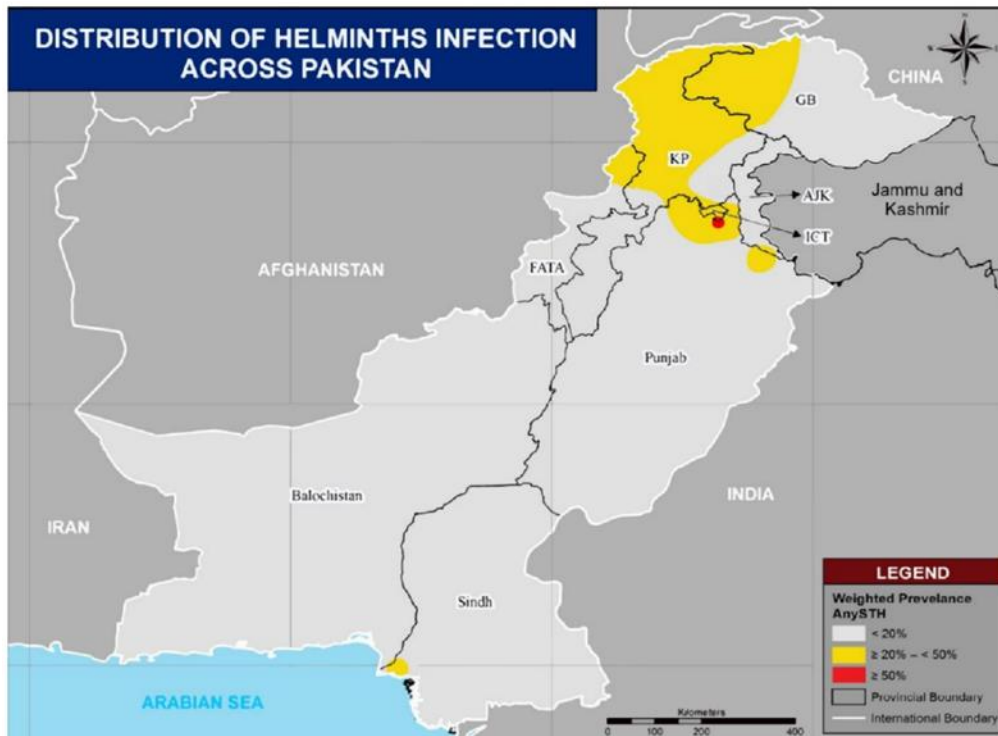


Figure 1. Weighted prevalence according to WHO treatment thresholds, Pakistan, 2016

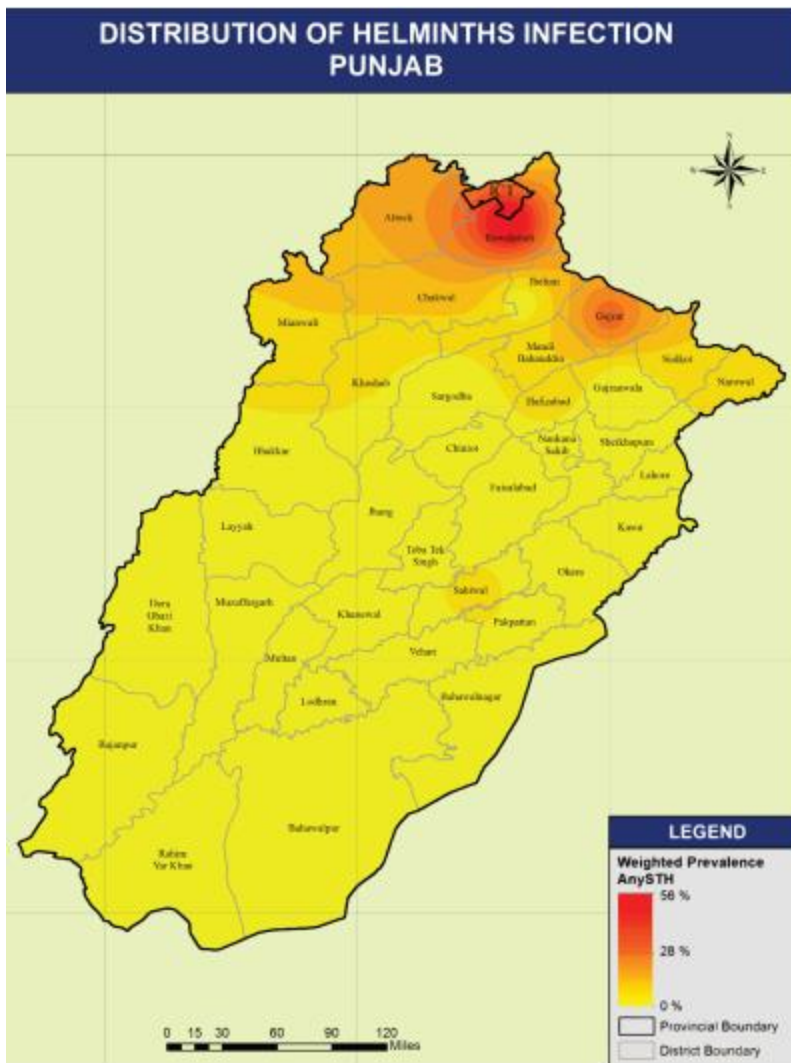


Figure 2. STH prevalence in Punjab, 2016

3. Target Population

In Punjab, **3.65 million school-age children (SAC) are in need of mass deworming treatment**, regardless of whether they attend registered or unregistered public schools, private schools, religious schools, or are out of school (i.e. non-enrolled). The WHO strategy for mass deworming defines school-age children as children between 5 – 14 years of age. In Pakistan, enrolled SAC within that age category attend classes 1 – 10. Therefore, the following are the subpopulation target groups for school-based deworming in Punjab:

- All enrolled children in classes 1 – 10 attending registered public schools
- All enrolled children in classes 1 – 10 attending registered private schools
- All enrolled children in classes 1 – 10 attending religious schools (deeni madaris)
- All out-of-school children and children 5 – 14 years of age attending unregistered schools

4. Goal, Theory of Change & Indicators of Success

The overarching goal is for children in at-risk areas of Pakistan to have improved health, increased access to education, and improved livelihoods potential as a result of being free of intestinal worms. To this end, the program goals are:

- To control the morbidity of STH infections in school-age children by achieving 100% geographical coverage and >75% therapeutic coverage during every annual round of mass deworming.
- To eliminate worms as a public health problem by ensuring prevalence of moderate to heavy intensity infection in all sentinel sites for STH reduced to < 1% and maintained.
- To strengthen health systems and structures for sustainable deworming.

Geographic coverage measures the number of districts receiving deworming treatment out of the total number of districts requiring MDA for STH. While therapeutic coverage is a district level calculation that measures the number of individuals treated for STH that require treatment within a certain district. In other words, geographic coverage measures whether the program has reached the districts that require treatment and therapeutic coverage measures how effective or successful the distribution was in a district (i.e. did we reach the majority of school-age children targeted for treatment). Morbidity from STH is measured by the intensity of infection across at-risk districts requiring treatment. Consistent high treatment coverage drives down disease intensity first followed by prevalence.

It is important to note that WHO guidelines now only define the elimination of worms as a public health problem by reducing prevalence of heavy to moderate intensity infection to 2%. However, since the at-risk STH districts within Punjab at the time of the baseline assessment already are below <2% intensity, the second goal has been amended slightly to *maintain* low levels of intensity and over time reduce the prevalence of disease across districts.

The Theory of Change below in Figure 3 includes the 2024 goal and targets and outlines the objectives and strategic priorities of the deworming program in Punjab. The activities, milestones and indicators are to be used by all stakeholders to align program planning and evaluation efforts across the set objectives and outputs as listed below.

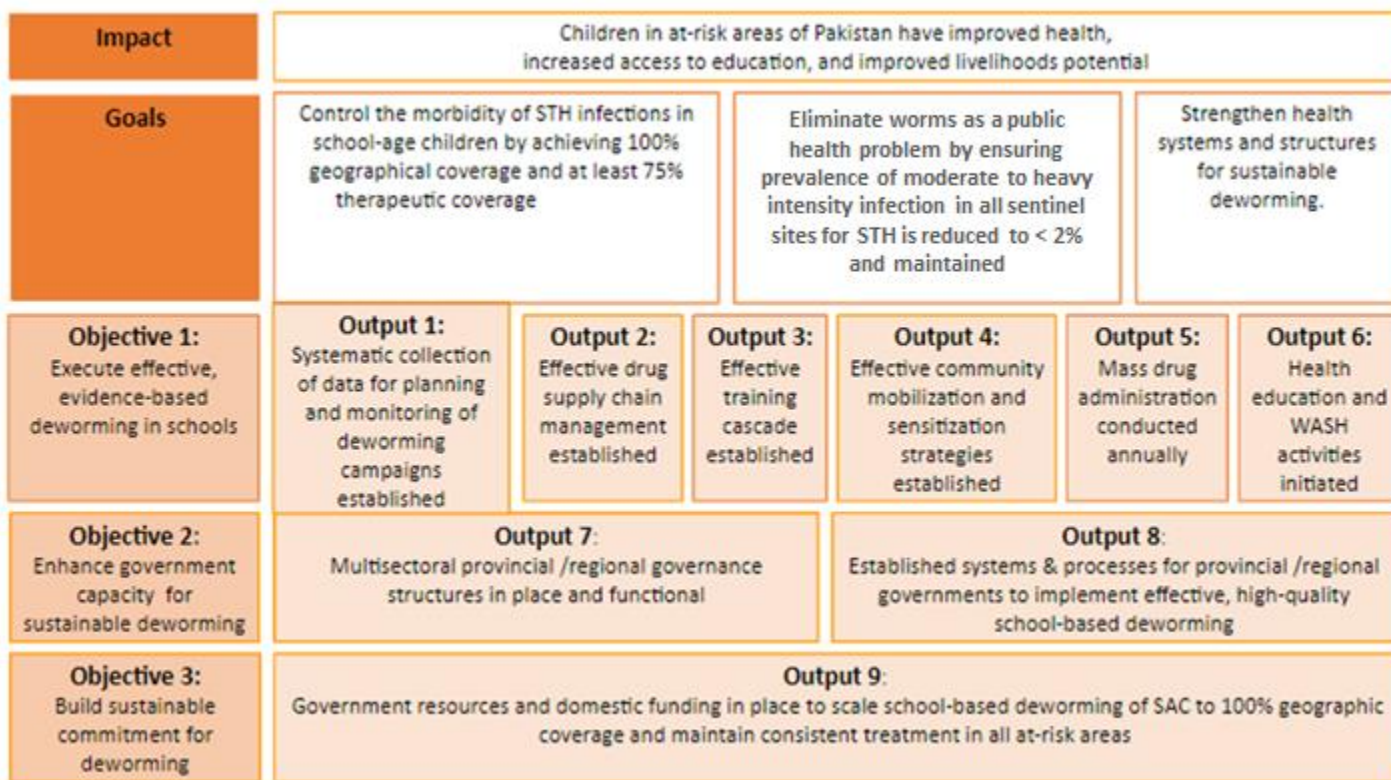


Figure 3. Theory of Change, Deworming Initiative of School-Age Children in Punjab

Table 2. Key indicators and targets for the Punjab Deworming Initiative (2021-2024)

Indicators/ Targets	2021	2022	2023	2024	Source	Numerator	Denominator
% of at risk-districts requiring treatment for STH that received treatment (geographic coverage)	100%	100%	100%	100%	District treatment reports/ Baseline mapping	Number of districts that received STH treatment	Number of districts requiring for STH treatment
% of SAC targeted that received STH treatment (therapeutic coverage)	>75%	>75%	>75%	>75%	District treatment reports/IU census population data	Number of SAC receiving STH treatment	Number of SAC requiring treatment for STH
% of sentinel sites maintaining <2% prevalence of heavy to moderate intensity infection for STH*	----	----	----	----	Sentinel site data	Number of sentinel sites with <2% prevalence of heavy / moderate STH infections	Number of sentinel sites tested for STH
Prevalence of soil-transmitted helminths (combined)*	----	----	----	----	Sentinel site data	Number of children with STH infection, combined prevalence	Number of children tested for STH
Prevalence of <i>Ascaris lumbricoides</i> *	----	----	----	----	Sentinel site data	Number of children with <i>Ascaris lumbricoides</i> infection	Number of children tested for <i>Ascaris lumbricoides</i>
Prevalence of Hookworm*	----	----	----	----	Sentinel site data	Number of children with Hookworm infection	Number of children tested for Hookworm
Prevalence of <i>Trichuris trichuria</i> *	----	----	----	----	Sentinel site data	Number of children with <i>Trichuris trichuria</i> infection	Number of children tested for <i>Trichuris trichuria</i>
% of target schools with at least one teacher attending training sessions	75%	80%	100%	100%	Training attendance/ District Education Secretary school data	Number of target schools with one teacher attending training sessions	Number of target schools for the deworming programme
% of target districts that received sufficient medicines for deworming prior to MDA	100%	100%	100%	100%	As reported by province or district focal points	Number of target districts that received sufficient medicines prior	Number of target districts for MDA

						to MDA (no shortage)	
% of deworming medicine inventory data reaching the provincial level within 1-month post MDA	75%	80%	100%	100%	Treatment reporting forms	Number of treatment reporting forms with completed medicine inventory reaching within 1-month	Number of target districts for MDA
% of treatment data reaching the provincial level within 1-month post MDA	75%	80%	100%	100%	Treatment reporting forms	Number of completed treatment reporting forms reaching w/in 1 month	Number of target schools for MDA/#of schools participated in training
% children interviewed who can identify 2 of 8 methods to prevent STH infection	50%	65%	75%	80%	Independent monitoring (IM)	Number of children interviewed during assessment who were able to report 2 of the methods	Number of children interviewed in the STH targeted schools
% of target schools utilizing awareness materials (i.e. banners displayed in a visible, central location)	75%	75%	75%	75%	Independent monitoring (IM)	Number of schools seen during IM with banners displayed	Number of schools visited during IM
% of parents interviewed on Deworming Day who were aware of deworming happening within their communities	>75%	>75%	>75%	>75%	Independent monitoring (IM)	Number of parents interviewed during assessment that were aware	Number of parents interviewed during IM
% of schools with basic sanitation services**	----	----	----	----	Independent monitoring (IM)	Number of schools' with improved, separated and usable toilets	Number of schools visited during IM
% of schools with a basic hygiene service***	----	----	----	----	Independent monitoring (IM)	Number of schools' w/ hand washing facilities & soap	Number of schools visited during IM

*Global best practices suggest assessing impact indicators such as intensity and prevalence of STH after 3- 5 consecutively successful rounds of deworming are complete (>75% annual treatment coverage for 3-5 consecutive years). Therefore,

targets for those indicators have not been included in this table. Based on the targets achieved through Punjab Deworming Initiative over the next few years, further discussions will take place regarding the need for an impact assessment

** It includes improved⁷ toilet, separate for boys and girls and usable (available, functional and private).

*** It includes hand washing facilities which have soap and water.

5. Establishing a Deworming Program in Punjab

5.1. Delivery Model for Targeting School-Age Children

With the need for mass deworming now established, the Punjab government can launch a successful, evidence-based deworming program. School-based deworming is a key strategy and delivery model that can be employed by the Punjab government to rapidly scale a cost-effective program treating at-risk school-age children (5-14 years of age) through existing education infrastructure and administered by teachers with support from the health system. This approach is well accepted by communities and efficiently targets the population group at greatest risk for infection: school-age children. School-based deworming programs, implemented jointly by ministries of education and health, have proven successful in providing high treatment coverage and reducing STH infection in countries in Asia and Africa.

Deworming children in each of the target sub-population groups (children enrolled at public schools, private schools, deeni madaris, and school-age children not enrolled at school) will provide unique challenges. However, detailed planning and mobilization of sub-populations can combat potential challenges regarding coordination, communication, access, and implementation of deworming treatment for all SAC. If needed, additional delivery platforms (e.g. community health workers, etc.) may be used to reach our targets of 75% therapeutic coverage rates.

5.2. Program Stakeholders and Governance Structure

The deworming program will be led and facilitated by the Health, Nutrition and Population (HNP), Planning and Development Board, Government of the Punjab. The key provincial stakeholders are the School Education Department (SED), Primary & Secondary Healthcare Department including PSPU and IRMNCH programs and Directorate General Health Services (DGHS).

The governance structure for the program will be composed of a **Multi-Sectoral Steering Committee** which will primarily be responsible for tracking the overall performance of the program and informing improvements for future deworming rounds. Since a Multi-Sectoral Steering Committee already exists in Punjab for the oversight of the Multi-Sectoral Nutrition Strategy, the same platform will also be utilized for the deworming program. Additionally, in order to **make** strategic program related decisions, a **Working Group (WG)** with representation from all the relevant departments has been formed for the development and implementation management of the deworming program. It will serve as the central decision-making body for the program. In addition to the Working Group, **District Management Committees**, in each district, will oversee program implementation and ensure all the guidelines are being followed. Once again, for this purpose, the platform of **District Malnutrition Addressing Committees (DMACs)** which already exists for the implementation of the Multi-Sectoral Nutrition Strategy can be utilized.

Comprehensive technical assistance for school-based deworming will be provided by IRD, IHN and Evidence Action.⁸ The active involvement of all stakeholders will be a key determinant in the overall success of the program, and all members of the Working Group and District Malnutrition Addressing Committees are expected to participate regularly in committee meetings.

⁷ “Improved” facilities in a school setting include: flush/pour-flush toilets, pit latrines with slab, and composting toilets.

⁸ The technical assistance will be time-bound and dependent on availability of external resources

5.2.1. Multi-Sectoral Steering Committee on Nutrition- Composition and Roles

The **Multi-Sectoral Steering Committee on Nutrition** which has already been established for the implementation of the Multi-Sectoral Nutrition Strategy in Punjab, will primarily be responsible for ensuring the progress of the program towards overall goals and key indicators (as in Figure 3 and Table 2).

Key roles & responsibilities of the Multi-Sectoral Steering Committee will include:

- I. Tracking achievement of program targets and key indicators
- II. Review of program data and results to inform improvements in future rounds
- III. Discuss avenues of government support to sustain deworming program in Punjab

5.2.2. Working Group -Composition and Roles

The Working Group will primarily be responsible for program development and management including formulation of program related documents, materials, budgeting and work-planning.

The Working Group is comprised of the following members:

S. No.	Title & Department	Status
1	Member Health, Nutrition and Population (HNP), Planning and Development Board	Chair
2	Assistant Chief (Health II), Planning and Development Board	Secretary
3	Additional Secretary (Schools), School Education Department	Member
4	Director Health Services, Primary and Secondary Healthcare Department	Member
5	Program Director, IRMNCH & Nutrition Program, Primary and Secondary Healthcare Department	Member
6	Program Director, PSPU, Primary and Secondary Healthcare Department	Member
8	Chief Health II, Planning and Development Board	Member
9	Head of WHO Sub-Office Lahore	Member
10	Representative from Interactive Research & Development Pakistan	Member
11	Representative from Indus Health Network	Member
12	Any other co-opted member	Member

Key roles and responsibilities of the Working Group include:

- i. To oversee the deworming component including identification of roles and responsibilities of:
 - a. Relevant Departments of the Government of the Punjab
 - b. Implementation and Technical Assistance Partners
- ii. II. To lead the development and implementation of the program strategy, including:
 - a. Defining the scope and goal of the program for the treatment and prevention of Soil Transmitted Helminthiasis (STH) among school-age children in the identified at-risk districts

- b. Endorsement of the work plan and financial resources for each round of deworming
- c. Endorsement of key program related documents/ materials, including: policy and institutional framework, adverse event management, operational plan for each round of deworming, training materials, community sensitization strategy and reporting forms
- iii. To establish mechanisms and lay down specific guidelines for the implementation, integration and sustainability of the program:
 - a. Mobilize relevant and necessary resources and personnel to achieve program objectives
 - b. Establish monitoring and evaluation mechanisms
 - c. Review program data and results in order to enhance the effectiveness of future deworming round
- iv. Any other role as deemed feasible by the Chair

The Working Group (WG) will convene the meetings on a quarterly basis or as per the need of the deworming program.

5.2.3. District Malnutrition Addressing Committees -Composition and Roles

District Malnutrition Addressing Committees (DMACs) have already been established to effectively address the issue of malnutrition in Punjab through the Multi-Sectoral Nutrition Strategy (MSNS). DMACs will primarily be responsible for providing support during the implementation of the deworming program in each at-risk district and will be comprised of the following members:

Note: Only the members from relevant (mentioned in bold font in the composition below) departments will attend the meetings for Punjab Deworming Initiative i.e. P&SHCD, SED and P&D. Any co-opted member can also attend the meeting as per the requirement of the program.

S. No.	Title & Department	Status
1	Deputy Commissioner	Chair
2	CEO District Health Authority	Secretary
3	Additional Deputy Commissioner (Finance & Planning)	Member
4.	CEO District Education Authority	Member
5.	Deputy Director (Extension) Agriculture	Member
6	XEN, PHED	Member
7	Additional Director Livestock	Member
8	Assistant Director Fisheries	Member
9	DFC Food Department	Member
10.	District Coordinator, IRMNCH & NP	Member
11.	District Population Officer, Population Welfare Department	Member
12.	Deputy Director (Dev), Planning and Development Department	Member
13.	Representatives from NGOs/ CBO	Member

Key roles and responsibilities of the District Malnutrition Addressing Committees include:

- I. Support development of district level work-plan and budget
- II. Support development of district level operational and monitoring plans (i.e. micro-planning)
- III. Ensure multi-sectoral coordination at implementation and district level
- IV. Ensure implementation of adverse event management protocol and reporting
- V. Ensure implementation of district and cluster/ circle level trainings cascade and drug distribution
- VI. Oversee data reporting through reverse cascade
- VII. Monitoring of program, including supportive supervision of program activities
- VIII. Liaise with provincial government relevant authorities
- IX. Ensure the compliance of Policy & Institutional Framework guidelines
- X. Any other role as deemed feasible by the Chair

5.2.4. Primary and Secondary Healthcare Department roles:

- I. Provide facilitation amongst the key stakeholders for smooth implementation of the deworming program
- II. Ensure treatment strategy is in line with WHO recommendations
- III. Issuing necessary directives to health personnel of the requirements for participation in the deworming program
- IV. Quantification and distribution/ bundling of deworming medication
- V. Assisting in development of training materials, IEC strategies and materials
- VI. Assisting in development of an adverse event management protocol
- VII. Communication of the program to health facilities at all levels, making health staff aware of their role in community mobilization and responding to potential adverse events
- VIII. Provision of trainers to facilitate training at all levels of the training cascade
- IX. Monitoring of program, including supportive supervision of program activities
- X. Reporting of children dewormed to M/o NHR&C
- XI. Liaise with education and other relevant departments.

5.2.5. Education Stakeholders roles:

- I. Sharing of relevant administrative data, including up-to-date data on numbers of schools (public, private) and enrollment
- II. Sharing of relevant administrative data, including up-to-date data on numbers of deeni madaris and enrollment
- III. Sharing of data on out-of-school children
- IV. Issuing necessary directives to education personnel of the requirements for participation in the deworming program
- V. Communication of the program to all schools, making teachers aware of their role in disseminating information to children and their parents, administering tablets to children, and reporting coverage
- VI. Assisting in development of training materials, IEC strategies and materials
- VII. Dissemination of IEC material including mobilization of school staff and school councils/committees, village councils in line with agreed community sensitization strategies
- VIII. Provision for trainers to facilitate training at all levels of the training cascade
- IX. Reporting of treatment coverage data through reverse cascade

5.2.6. Planning & Development (P&D) Board roles:

- I. Public financing of the program for long-term sustainability
- II. Overall monitoring & evaluation of the deworming program.

5.2.7. IRD Pakistan, IHN and Evidence Action roles:

Provision of technical assistance to government stakeholders for school-based deworming, including support in the following areas:

- I. Development of a policy and institutional framework
- II. Development of a training cascade and training material
- III. Development of community mobilization strategies and materials
- IV. Development of a comprehensive adverse events management protocol
- V. Development of monitoring and evaluation strategies
- VI. Development of operational plan and micro-planning templates
- VII. Support government devise strategies to integrate the distribution of key deworming related materials and drugs with the training cascade
- VIII. Support in development of budgets and work plans
- IX. Support for the estimation of drug requirement, completion of the annual drug requisition form, and reporting to WHO
- X. Support for program monitoring to ensure the preparedness for training and mass drug administration, as well as reporting cascade in a timely manner
- XI. Conduct independent monitoring and coverage validation of school-based deworming to provide an independent assessment of program coverage and processes, and sharing of findings with the stakeholders to guide strategies for future rounds of deworming.

5.3. Alignment of Deworming with Global Guidelines, Targets and Commitments

In 2001, the World Health Assembly (WHA) passed resolution WHA54.19 endorsing regular treatment of groups at-risk of schistosomiasis and STH, particularly school-age children, as the best means to reduce mortality and morbidity resulting from STH and improving health in infected communities.

In 2012, the WHO Strategic and Technical Advisory Group for Neglected Tropical Diseases (NTDs) and partners published a roadmap for the control, elimination and eradication of NTDs, including targets for the period 2012–2020⁹. The target set for STH was reaching 75% of at-risk school-age children with deworming medication by 2020. In addition, the London Declaration on Neglected Tropical Diseases was launched on the 30th of January 2012, in which pharmaceutical companies, donors, endemic countries and non-government organizations pledged their commitment to control, eliminate or eradicate 10 diseases (including control of STH) by 2020.

Most recently, NTD programs, like mass school-based deworming, either align with or are affected by numerous Sustainable Development Goals (SDGs) set by the United Nations General Assembly for 2030. NTD programs have the greatest relevance for SDG 3 (Good Health & Well-being) but also play an important role increasing the health and economic status of the poorest of the poor which aids SDG 1 (No Poverty), ending poverty in all its forms. Close alignment also occurs across Goals 2 (Zero Hunger), 4 (Quality Education), 6 (Clean Water and Sanitation), 11 (Sustainable Cities and Communities), and 17 (Partnerships for the Goals).

The Punjab Deworming Initiative follows WHO and global goals, targets and guidelines while building a government owned program from the onset. Wherever possible, government structures and systems will be utilized and strengthened for the planning, implementation and monitoring of the Punjab Deworming Initiative.

5.4. Alignment of Deworming with Other Health and Education Programs and Policies in Punjab and at National Level

School-based deworming as a strategy, supports the National Education Policy 2017¹⁰; which states that “Health departments should closely coordinate with the education department to provide health coverage to all students”.

The Punjab Deworming Initiative is also aligned with the national and provincial multi-sectoral nutrition strategies proposed by the Multi Sectoral Nutrition Center and the Scaling-Up Nutrition Program. These nutrition sensitive

⁹World Health Organization. (2012). Accelerating work to overcome the global impact of neglected tropical diseases – A roadmap for implementation

¹⁰Pakistan Education Policy 2017; chapter 13; physical education, health and sports in education; goals objectives and targets; P-105

initiatives highlight the importance of activities such as deworming and their significant contribution towards addressing the challenges of malnutrition and stunted growth in Pakistan.

Vision 2025 within the Planning Commission, Ministry of Planning Development & Reform (2014) suggests addressing and raising population awareness campaigns about infectious diseases and other comorbidities that can be fatal, while simultaneously encouraging coordination of health policies amongst provinces to boost a healthy infrastructure promoting wellbeing of citizens, both of which will be supported by the Punjab Deworming Initiative. Furthermore, the Initiative is also in line with the Punjab Health Sector Strategy (2019-28), which aims to improve the health status of citizens by collaborating with both public and private health and non- health sectors.

6. Implementation Strategy for Punjab Deworming Initiative

School-based deworming will operate as an annual campaign, with deworming tablets administered by teachers at schools at no cost to children or families. Non-enrolled children will be encouraged to come to schools to receive treatment, with no bias in the program regarding enrollment status. Prior to deworming in schools, training will be conducted to inform teachers and other personnel involved in the program about their responsibilities and pass key knowledge to safely administer deworming tablets. The training will also serve as a means to provide school teachers with the resources they need to conduct deworming, including medicines, reporting forms, and Information, Education and Communication (IEC) materials.

While training teachers and using a school-based approach is the main focus of the program, given the current situation regarding **COVID-19**, in the case of an unforeseen closure of schools, a community-based approach may need to be adopted. For this purpose, possible modifications can be expected in the implementation strategy, by training Lady Health Workers (LHWs) and School Health and Nutrition Supervisors (SH&NS) as well to administer deworming medicines to school-age children via door to door visits during IRMNCH & NP's Nutrition Week. However, priority will be given to the school-based model for this program.

The key stages involved in planning and implementing school-based deworming are shown in Figure 4 and further described in this section; it is important to note that many program components will take place simultaneously. In order to ensure cost-effectiveness of the school-based deworming program, the various components of the implementation strategy will be evaluated for need and cost to determine the final program design. Existing government systems will be leveraged where possible, contributing to long-term program sustainability.



Figure 4. Key stages involved in planning and implementing a school-based deworming campaign. Reporting of data is a core component of monitoring and evaluation (M&E), but M&E will be employed throughout the various stages of the implementation strategy to ensure progress towards goals and inform programmatic decisions.

Figure 5. Timeline for planning and implementing annual mass deworming

Week 1-4	Week 5-16	Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24
Setting up IC and SC/TWG committees, providing introductions to deworming, drafting TORs	Planning, drafting, reviewing, finalizing and signing key docs, including: LoI, Policy & Institutional Framework, TOC, work plan, budget, Operational Plan, AE Protocol, training, IEC material and reporting forms	Material & drug preparations, including bundling ahead of distribution			Level 1 Training	Level 2 Training	Level 3 Training	Mobilization Week w/ Launch Event	MDA

6.1. Program Planning & Management

For each annual round of deworming, it is important for all stakeholders to establish agreed, clear targets for the MDA using the most recent available population data. This will serve as a key metric of program performance, given the need to achieve high therapeutic coverage (> 75% of the target) to have a significant impact on worm infection in the target population.

Joint ownership and collaboration among stakeholders from Health, Education, Local Government and Planning & Development Board will be critical to the success of the deworming program. Given the multiple responsibilities of all stakeholders and the effort involved in establishing the deworming program, on-the-ground support from the technical assistance partners will help to coordinate logistics and other program details leading up to deworming days.

Intense preparation and follow up activities are required both pre and post deworming. The stakeholders will need to undertake detailed planning to support a successful roll-out of the deworming campaign and maximize the number of children dewormed and provide all relevant stakeholders at each level (district, sub-district/cluster) with clear guidance on their roles and responsibilities.

The technical assistance partners will support the WG to develop a comprehensive **operational plan** for each round of deworming, specifying how key activities will be conducted. Lessons learned during the course of implementation will be incorporated into future deworming rounds.

When should school-based deworming be conducted?

As schools and teachers are used as a mechanism for administering tablets to children, school-based deworming has to be implemented when schools are in session. To facilitate teachers and to help to maximize coverage, deworming should be conducted at a time during the school year when there is sufficient time in advance of deworming to allow for preparations (e.g. training of teachers, outreach to students and parents, distribution of medication and other materials to the schools), and sufficient time after deworming to allow for schools to report back to authorities. Accordingly, periods around school exams and holidays are best avoided.

6.2. Drug Procurement & Supply Chain Management

Integral to the program's success is the availability of sufficient quantities of drugs at schools in time for deworming day. The five main steps for drug procurement and management include quantifying drug needs; procuring drugs; distributing drugs; administering drugs; and ensuring leftover drugs are transported to appropriate facilities for storage.

6.2.1. Quantifying & Procuring Drugs

The school-based deworming program will use **mebendazole 500 mg tablets** donated through WHO for the treatment of school-age children (5 – 14 years). Mebendazole is on the "National Essential Medicines List" in Pakistan issued by the Drug Regulatory Authority of Pakistan, Ministry of National Health Services, Regulations and Coordination (M/o NHR&C), and on the WHO model list of essential medicines.

For each annual round of deworming, M/o NHR&C will lead the calculation of overall drug requirements, with support from the technical assistance partners as needed, obtaining the data from the Punjab government and consolidating with data from other regions at the national level. The Joint Application Package (JAP) including the Joint Request for Selected Medicines (JRSM) will be submitted to the WHO Country Office – Pakistan, which then submits to WHO regional office for approval before it goes to the WHO Headquarters. WHO Headquarters conducts final approval and drug order placement to the drug manufacturer/pharmaceutical company. Following the approximate 1 month for approval and final drug order, it takes an additional 6 – 8 months for the manufacturing of drugs and delivery to the country of request. The pharmaceutical company takes the responsibility of the costs associated with the shipping of drugs to the central point of the consignee. As per standard procedure, every consignment of drugs received will necessitate testing by the Drug Regulatory Authority of Pakistan to obtain a No Objection Certificate under S.R.O.577(I)/2016, dated 15 June, 2016.

As deworming medication for school-age children is provided free-of-charge through the WHO global drug donation program, and future donations depend on the number of tables issued, used, wasted and remaining, the M/o NHR&C is committed to reporting to the WHO the number of children dewormed during each MDA.

6.2.2. Drug Distribution and Storage

The logistics of drug supply involves coordinated effort from the Department of Health and Department of Education in lieu of a specific government body with experience handling drugs. An effective drug management system will be established, building, where possible, upon existing systems utilized for the distribution of medications for other programs. Protocols will be developed outlining: how mebendazole will be distributed from central stores to schools; who will be responsible for delivering the drugs to each level and who is responsible for receiving the drugs at each level; who is responsible for dividing up the bulk drug shipments in preparation for delivery to the next level of the cascade; method of record keeping and receipt of drugs at each level; the strategies and alert systems that will be established across districts for managing drug supply issues prior to and during the MDA; and a reverse cascade process to retrieve and account for unused tablets, and properly store them for the next MDA round.

Upon arrival in the country, the drugs are stored at the WHO central warehouse in Islamabad and arrangements for this are made by the M/o NHR&C. The Punjab Working Group will calculate drug quantities needed for the annual MDA and then will write to the M/o NHR&C for the release of the drugs. Punjab's share of mebendazole prior to each annual MDA will be transported by WHO from the WHO warehouse in Islamabad to the facility identified by the Department of Health. The Department is responsible for making sure that accurate quantities arrive and are then quantified, repackaged, and further distributed to the identified training venues as per the requirement. The technical assistance partners will provide technical support for the design of an appropriate distribution cascade and preparation of a drug-bundling plan for distribution of the deworming drugs along with the other program materials during training sessions (see section 5.3.) The extent of support provided by the technical assistance partners will be need-based and thus, will vary from round to round. The District Health Authority of each at-risk district will be responsible for ensuring the smooth planning and implementation of the medicine distribution cascade once the medicine supply reaches the district.

6.2.3. Adverse Event Management

An **Adverse Event Management Protocol** is an essential program document, intended to ensure that all parties involved in deworming understand how to identify an adverse event, what to do, and who to contact in case an adverse event occurs. Deworming drugs are very safe; however unrelated events can sometimes be attributed to deworming if there is a lack of awareness by teachers, children, and communities. The possibility of adverse events requires that protocols are established and circulated to all teachers and health centers so that the health functionaries are ready to handle any

Accessing freely donated mebendazole for school-age children

Mebendazole is donated to national ministries of health through WHO in all endemic countries for the treatment of all children of school age. The joint application package consists of three forms that have been developed to facilitate the process of requesting drugs through the WHO donation program. These forms constitute an official government request to WHO for the supply of preventive chemotherapy medicines. The forms must be signed and approved by the M/o NHR&C to formally endorse the country's request for these medicines. All donations are subject to review and/or availability of medicines. In addition, use of donated medicines must be adequately reported to WHO upon completion of treatment activities.

emergency. The technical assistance partners will work with the stakeholders to develop the protocol and support set up of related structures as needed.

6.3. Training & Distribution Cascade

A training and distribution cascade provides a stepwise model for delivering information, drugs, and other program materials from the provincial level down to the districts and further to schools and communities where program

implementation takes place. A proven model used in many NTD and public health programs worldwide, this structure enables government personnel at each administrative level to engage with the program as relevant to their expertise and areas of oversight, while breaking the overall complex program into manageable segments. The training cascade results in capacity building for government officials at each administrative level within Punjab and enables efficient collaboration between Punjab health and education sectors.

The technical assistance partners will work with the government to design the training cascade, develop training materials and curricula, and train lead/master trainers. Training materials will be developed to convey necessary information in clear, simple terminology; have a brief handout with key messages that can be taken with them; and will enable teachers to convey the key messages from training to their peers upon returning to school, in preparation of deworming. The rollout of the training cascade will occur within one to two months immediately prior to the MDA (figure 6). The program will aim to leverage training structures and personnel that are already in place and utilized for other government-led programs and initiatives in Punjab. The training strategy will also use the existing 'district' and markaz based training venues and training personnel that are routinely used by the SED for other educational programs.

The deworming drugs, materials and reporting forms needed for a successful deworming campaign will be distributed to schools approximately 7 days in advance of the MDA. The technical assistance partners will help the Punjab government devise strategies to integrate the distribution of key deworming materials within the training cascade.

In general, the cascade structure in Punjab will consist of 3 levels or tiers (see figure 5 below). Lead trainers trained at the provincial level will provide training to master trainers at the respective district level. The district level master trainers will train teachers and health facility representatives identified and placed into different markaz within at-risk, targeted districts. Furthermore, the Technical Assistance providers and Working Group members will aim to devise an integrated cascade structure to accommodate for health and education as well as public, private and religious schools. The only bifurcation at each level will be grouping training by gender.

Safety of mebendazole

Hundreds of millions of doses of mebendazole have been used since registration for human treatment was approved. Mebendazole has been through extensive safety testing and has been used in millions of people with few and minor side-effects. Extensive experience of deworming millions of children worldwide confirms that mebendazole causes only rare, mild and transient side-effects or "adverse drug reactions", and that these reactions are generally related to degeneration of the worms that have been killed. Most of the adverse events observed in school programs are mild and occur during initial rounds of implementation of the intervention – a time when children harbor more infections of high intensity. Mild abdominal pain, nausea, vomiting, diarrhea and fatigue are the most commonly reported adverse events in some children with higher worm loads but are not serious and do not normally require medical treatment. Mebendazole is easy to administer by non-medical personnel (e.g. teachers).

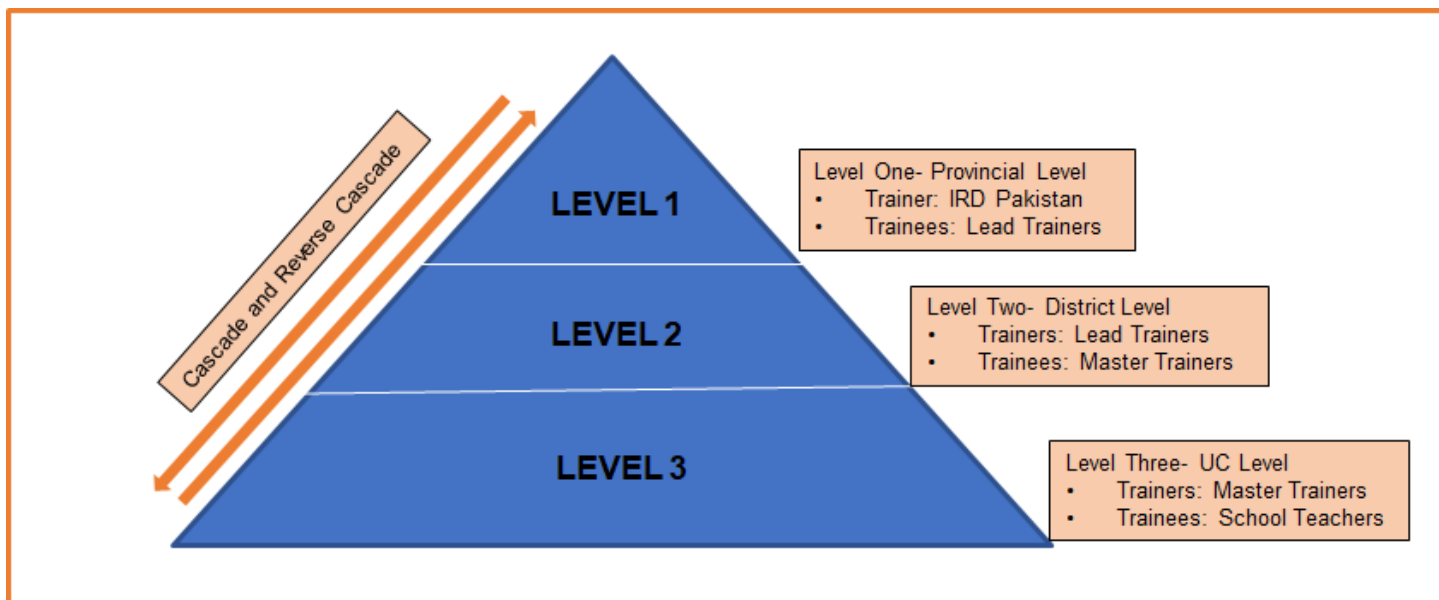


Figure 5. Punjab training cascade structure

6.4. Public Awareness & Mobilization

For mass public health programs, it is critical to inform the public about the purpose of the program, the safety of the drugs, and the benefits of deworming. Sensitizing the media, politicians, religious leaders and local community leaders, is essential to avoid inaccurate and sensational messages being conveyed to the public, particularly in the case of an adverse event. Establishing trust in the deworming program amongst parents and communities will be essential in order to treat >75% of school-age children consistently and across all at-risk districts. The technical assistance partners will work with the WG to tailor locally appropriate awareness campaigns about the deworming program. These awareness campaigns will communicate targeted messages through a variety of channels to increase public awareness of deworming days and convey messages about the safety of the medicine and why treatment is important. Such campaigns will aim to encourage participation of both enrolled and non-enrolled children, as well as to provide information to children, parents, teachers, and community members on prevention of worm infection.

Existing tools and channels in Punjab for public awareness and mobilization can be leveraged for the Punjab Deworming Initiative. The Department of Health plays an important role in community mobilization for dengue and other epidemics by spreading messages through media such as banners and billboards. Similarly, the concerned wing of the SED utilize mass messaging through WhatsApp and SMS for communicating important announcements to teachers. Child health and education messages are often delivered free of charge through national TV and radio along with the private TV channels, by arrangement of the Ministry of Information Broadcasting & National Heritage (M/o IB&NH) and Directorate General of Public Relations (DGPR), Government of Punjab. Local cable TV and social media can potentially be utilized to convey public awareness messages. The following communication and mobilization activities are examples of what could be facilitated prior to deworming:

Effective community sensitization and mobilization will support the MDA by:

- Raising awareness on the importance of deworming and generating demand among beneficiaries and other relevant audiences (i.e. parents, policy-makers, government, media)
- Maximizing the number of children dewormed during each treatment round, including hard-to-reach populations such as out-of-school children
- Preventing negative publicity and the spread of false information about deworming, both at the community level and in the media, and ensuring proper management of any adverse events

- Provide text messages to parents sponsored by PTA

- Hang banners, 1 per school
- Local TV and radio spots
- Create and circulate standardized information slips to parents
- Conduct a launch event at the provincial level with media coverage
- Conduct a press conference at the district level
- Circulate a press release highlighting the upcoming MDA dates
- Conduct a social media campaign
- Post Public Service Announcements on social media (PSA)
- Set up a WhatsApp for Business account to spread key program messages
- Conduct transport branding

6.5. Mass Drug Administration

School-based deworming is often successful operating as a campaign, where awareness is generated and momentum gained through community sensitization at a single point/s in the year. In this model, deworming in schools is typically implemented through a main **deworming day** or in some cases a deworming week, targeting all school-age children, whether or not enrolled at school, followed by a **mop-up day**, typically within one week of the deworming day, to target children who did not receive deworming medication on deworming day/week. This mop-up can be very useful for ensuring high program coverage before the annual round of deworming comes to a close.

Deworming medication will be administered by teachers at schools, with officials from the health system on standby to support if and when problems arise (see section 4.2.2) or in the case of liaising with Nutrition Week, medication will also be administered by Lady Health Workers (LHWs) and School Health and Nutrition Supervisors (SH & NS).

Teachers will administer individual treatments following procedural steps to deworming as learned during the training cascade and record the number of children who received a tablet using standardized reporting forms; forms are aggregated at the school level and submitted to designated officials according to the agreed-upon reporting cascade (see section 5.6.2). Open bottles of mebendazole will be taken to either the cluster or district level health facilities for use, while unopened bottles of mebendazole will be sent back to the identified provincial storage facility, accounted for and used in the next annual mass deworming administration.

6.6. Monitoring & Evaluation

The school-based deworming program will require a strong monitoring and evaluation (M&E) system to establish that the deworming campaign is implemented as planned and the desired results are being achieved. The M&E system is divided into 3 main components: process monitoring, performance monitoring and impact evaluation (Figure 6). All program elements of the process involved in ensuring the successful implementation of a deworming campaign will be monitored ('process monitoring'), as will the overall performance of deworming at schools ('performance monitoring'). The key measures of performance are **geographical coverage** (the proportion of at-risk districts implementing school-based deworming) and **therapeutic coverage** (the proportion of the school-age children dewormed). The overall aim of the entire program is to reduce the worm burden amongst school-age children, and the impact of the deworming program will be evaluated by STH prevalence and intensity surveys ('impact evaluation') after a number of rounds of high-coverage

deworming. Careful monitoring will help to identify areas where improvement is necessary, guide future planning, and allow assessment of the overall impact of the program.

The technical assistance partners will support the design and implementation of a robust and objective M&E strategy for school-based deworming which will outline the M&E requirements for each deworming round – pre, during and post MDA.

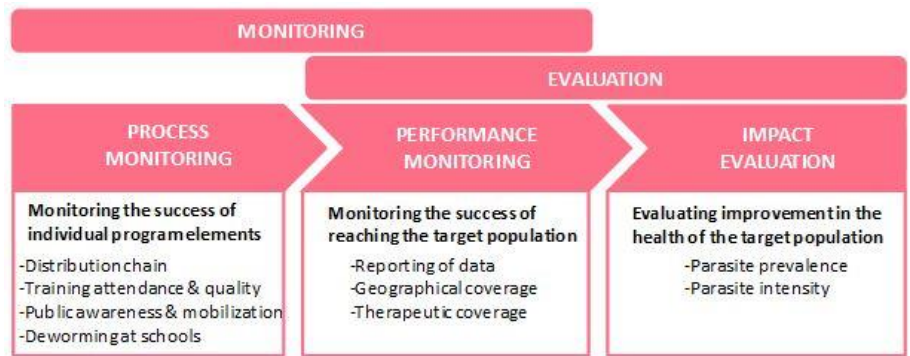


Figure 6. Overview of M&E strategy.

6.6.1. Process Monitoring

A robust process monitoring plan will be put in place to ensure that all program activities are implemented as per guidelines and operational plans. Monitoring will assess preparedness to ensure that everything is ready in advance of the deworming campaign. Attendance of participants at all training sessions throughout the training cascade will be recorded using attendance sheets. The quality of training will be monitored by observational monitoring visits to selected training sessions. Direct observation of deworming in a sample of schools on deworming day and mop-up day will serve to monitor that deworming is actually happening, that key processes are being followed, and also to highlight any difficulties. Process monitoring will be conducted by independent personnel contracted by the technical assistance partners, as well as through routine supportive supervision conducted by engaged government stakeholders at various levels of implementation.

6.6.1.1 Supportive Supervision

Relevant government stakeholders will conduct supportive supervision of key components of the program. Selected training sessions will be visited to ensure that the training is taking place, and selected schools will be visited on deworming and mop-up days to observe the process of deworming. The technical assistance partners will support the government stakeholders in developing appropriate tools for supportive supervision (i.e. supportive supervision checklists).

6.6.2. Performance Monitoring

6.6.2.1 Reporting of Treatment Data – Reverse Cascade

A key indicator for the success of deworming is treatment coverage, which is the proportion of school-age children dewormed out of the total population of school-age children in the implementation unit or district. In order to collect treatment coverage, the technical assistance partners will support the stakeholders to design (i) appropriate reporting forms including those to be completed by teachers on the day of deworming and (ii) an appropriate reverse cascade structure to provide a cost-effective and efficient system for reporting treatment data.

The existing information cascade within the School Education Department (SED) will be utilized in the reverse cascade structure to transfer treatment reporting forms and left-over medicines from the schools, to the markaz level, then to the tehsil level and then to the district level. The Area Education Officer (AEO) will conduct the first point of data aggregation summarizing all the targeted schools’ treatment summary forms into the Markaz reporting form. Following this, the AEOs will provide the Markaz level forms to their respective Deputy District Education Officers (DDEO) along with the left-over medicine. The DDEOs will develop a Tehsil level form and submit it to the District Education Officer (DEO) along with the left-over medicines.

The DEOs will develop and deliver the completed district reporting form for their stream along with the left-over medicine to the nominated focal person of the District Education Authority. The nominated focal person will receive multiple district level forms from different DEOs (DEO Elementary Male, DEO Elementary Female, DEO Secondary, DEO nominated for reporting Private Schools' data and DEO Literacy and Non-Formal Basic Education Centers). Upon receipt of all the district level forms, the focal person will collate the data to produce one district level form and present it to the Sub-Committee of the District Malnutrition Addressing Committee (DMAC) for verification. During the DMAC meeting, the nominated focal person of the District Education Authority will hand over the left-over medicines to the nominated focal person of the District Health Authority. The DHA focal person will then separate the open bottles from the closed bottles and send the former to the nearest health facilities to deworm children and send the latter back to the provincial warehouse for future use.

The nominated focal person of the District Education Authority will send the finalized district treatment reporting form to the School Education Department, where all district reporting forms will be aggregated into the provincial treatment reporting form. Select Working Group members will verify the accuracy and completion of the provincial treatment report and then disseminate the results of the MDA round to the Steering Committee one to two months following the MDA (see Figure7). The School Education Department will also send the provincial treatment reporting form to the Primary and Secondary Healthcare Department. The Health Department will further report the treatment data to the Ministry of National Health, Services, Regulation and Coordination. As deworming medication for school-age children is provided free-of-charge through the WHO global drug donation program, the M/o NHR&C will report the number of children dewormed to the WHO.

It is important to note that this reverse reporting cascade pertains to school-age-children enrolled in schools which are registered with the School Education Department. For school-age-children who are enrolled in schools registered by any other authority, are a part of the informal education sector or are out-of-schools, a customized reverse reporting cascade will be developed and will be integrated into the existing system of the program.

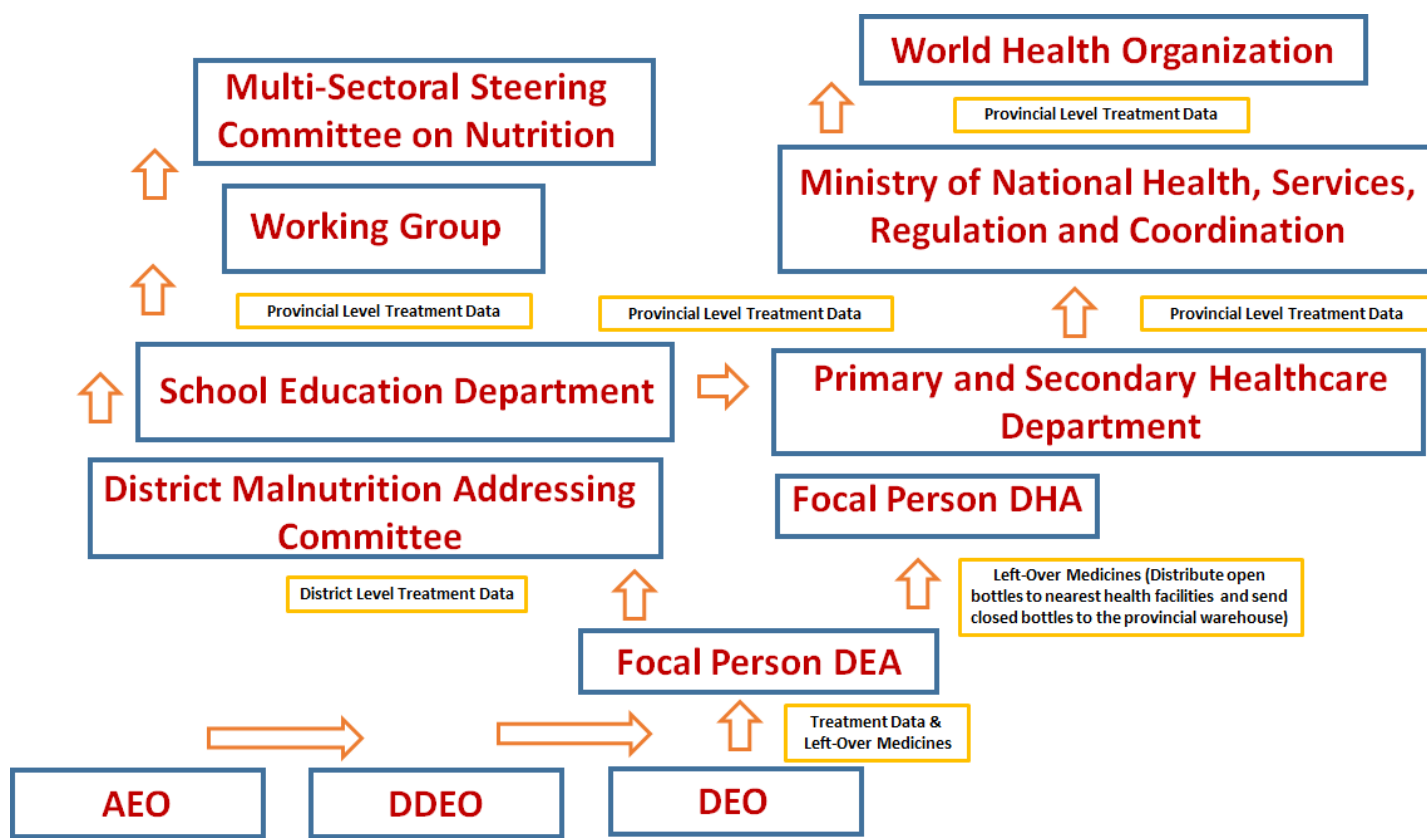


Figure 7: Reverse Reporting Cascade for Treatment Forms and Left-Over Medicines

In the case that a community-based approach is utilized for the deworming of school-age children, school-based systems and structures can be easily adapted to other platforms for distribution of deworming tablets in the case that schools are not accessible.

6.6.2.2 Coverage Evaluation Surveys

In order to verify that the number of children reported as being dewormed corresponds to the actual number of children who received a tablet, coverage evaluation surveys (CES) targeting both enrolled and non-enrolled children will be conducted in the weeks after deworming day. CES is a WHO-recommended strategy that serves to verify that the reported coverage corresponds to the actual number of children who received a tablet during the MDA. CES will be conducted by independent monitors contracted by the technical assistance partners. Following data analysis, the technical assistance partners will share the findings with the steering committee, and make recommendations about areas of the program that can be improved with a view towards improving coverage and/or quality of reporting.

6.6.3. Impact Evaluation

Impact evaluations are recommended to be conducted after several successive years of high-coverage MDA. It is strongly recommended that an impact evaluation be built into the M&E strategy from the outset. Impact evaluations involve parasitological surveying for prevalence and intensity of STH, following a methodology where 50% of sites from the baseline survey are randomly selected for inclusion, with 50% of new sites also randomly selected. There are technical requirements to be followed, and technical assistance partners can provide resourcing and coordination assistance if needed. Impact evaluation measures a change in disease status and typically aims to determine what changes are attributable to the program. Changes (ideally, reductions) in prevalence and intensity of infection are compared back to the baseline and ideally, results are assessed alongside coverage. Results are used to guide strategic directions of the program, specifically changes in treatment strategy if warranted.

All impact indicators measuring intensity and prevalence of STH will be assessed after 3-5 successful rounds of deworming are complete (>75% annual treatment coverage for 3-5 consecutive years).

6. Program Financing

The Punjab Deworming Initiative will be implemented outside the Annual Development Plan (ADP) but technical assistance partners will use their available resources to support program implementation while funds should be made part of regular health programs in future. In this regard, a PC-I will preferably be prepared for the Punjab Deworming Initiative post the first round of the MDA, as per the decisions taken by the notified Working Group.