



Workshop for Training on Regional Guidance for
Implementation of Integrated Deworming Actions
Meeting for Intensifying Integrated Efforts for Control
of Soil-Transmitted Helminthiases in the Region of the
Americas: Working Together for a Common Goal

Bogota, Colombia, 13 – 17 May 2013

From 13 to 17 May 2013, delegates from ministries of health and education from 18 countries of the Region of the Americas and strategic partners met in Bogota, Colombia in order to promote integrated actions to control soil-transmitted helminths in the agenda of public health priorities in their respective countries.



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Agence canadienne de développement international

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Acronyms

CENCET	National Center of Tropical Disease Control of the Dominican Republic
CWW	Children Without Worms
DEC	Diethylcarbamazine (citrate)
EPI	Expanded Program on Immunization
ETRAS	Regional Working Team in Water and Sanitation
FBO	Faith-based Organizations
GNNTD	Global Network for the Neglected Tropical Diseases
HCB	Help Children Barcelona
IMCI	Integrated Management of Childhood Illness
IADB	Inter-American Development Bank
LAC	Latin America and the Caribbean
LF	Lymphatic Filariasis
MDA	Mass Drug Administration
NGO	Nongovernmental Organizations
NID	Neglected Infectious Diseases
PAHO	Pan American Health Organization
PCT	Preventive Chemotherapy
PMTCT	Prevention of the maternal and child transmission
Silais	Local Comprehensive Health Care System in Health (Nicaragua)
STH	Soil-transmitted helminth infections
WHO	World Health Organization

EXECUTIVE SUMMARY

Neglected infectious diseases (NIDs) affect especially poor and low-income population groups with low education levels and poor housing, no access to basic services such as drinking water and basic sanitation and who live in conflict areas or environmentally deteriorated areas where barriers to access health services are common. Given their common social and environmental health determinants, neglected infectious diseases frequently overlap geographically. The burden of neglected infectious diseases in Latin America and the Caribbean represents 8.8% of the world's disease burden and about 5 million disability-adjusted life years (DALYs)¹. In October 2009, the Directing Council of the Pan American Health Organization/World Health Organization (PAHO/WHO) adopted Resolution CD49.R19 on the "Elimination of Neglected Diseases and other Poverty-related Infections"² where PAHO/WHO member states expressed their commitment to achieve specific control or elimination goals for these diseases.

Soil-transmitted helminthiases occupy an important place among the NIDs. In 30 Latin American and Caribbean (LAC) countries there are more than 49 million children between 1 and 14 years of age in risk of infection by soil-transmitted helminths³ whose growth and development are potentially threatened and who are exposed to irreversible consequences in their performance as working adults. Although soil-transmitted helminthiases control requires inter-sectoral work including not only deworming but also interventions on those health determinants associated to persistent infection in affected communities, systematic deworming among children under 15 years of age has not been widely implemented in the Region, as shown by the fact that during 2011 only six million preschool-age children and 19 million school-age children received deworming treatment in nine countries.

In this context, the PAHO/WHO NID regional program developed the "*Operational Guidelines for the Implementation of Integrated Deworming Activities against Soil-transmitted Helminthiases*" aimed at promoting deworming as an endeavor integrated to other on-going public health components and activities and not as a vertical program action detached from joint integrated action. The Guidelines define integration as a process aimed at jointly organizing intervention planning, implementation and evaluation. They also promote joint work to maximize resources (human, financial, technical, technological and logistic) and improve local public health program efficiency without affecting already functional components. The Guidelines include detailed operational information to increase deworming actions in the Region, and they also clearly state the need to integrate water, sanitation and hygiene-related activities as part of the intervention package to achieve soil-transmitted helminthiases control.

The PAHO/WHO NID regional program, together with Children Without Worms (CWW), the Sabin Vaccine Institute Global Network for Neglected Tropical Diseases (Global Network/Sabin) and the Canadian International Development Agency (CIDA), held two meetings to promote soil-transmitted helminthiases

¹Hotez PJ, Bottazzi ME, Franco-Paredes C, Ault SK, Periago MR. *The Neglected Tropical Diseases of Latin America and the Caribbean: A Review of Disease Burden and Distribution and a Roadmap for Control and Elimination*. *PLoS Negl Trop Dis* 2(9). Fecha de consulta: 21 de junio de 2011. Disponible en: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2553488/?tool=pubmed>.

²Pan American Health Organization, Directing Council. Resolution CD 49. R19, "Elimination of Neglected Diseases and other Poverty-related Infections"; October 2, 2009. Accessed on: June 21, 2011. Available at: http://new.paho.org/hq/index.php?option=com_content&task=view&id=1640&Itemid=1425&lang=es.

³Saboya MI, Catala L, Nicholls RS, Ault SK (2013) *Update on the Mapping of Prevalence and Intensity of Infection for Soil-Transmitted Helminth Infections in Latin America and the Caribbean: A Call for Action*. *PLoS Negl Trop Dis* 7(9).

control actions in LAC: 1) a workshop aimed at validating and training for the implementation of the Guidelines (mentioned in the previous paragraph) regarding the integration of deworming within relevant public health programs and activities, and 2) a meeting with partners and stakeholders aimed at enhancing integrated efforts for soil-transmitted helminthiasis control in the Region of the Americas. The two events were held in Bogotá, Colombia, from May 13 to 17, 2013.

The response to the invitation issued for the two events was excellent. The workshop was attended by health and education ministries' delegates from 18 countries, as well as by PAHO/WHO regional advisors for vaccination, food and nutrition, emergency environmental health, and childhood integrated health programs, by communicable disease advisors in PAHO/WHO offices in participating countries, by the WHO advisor for soil-transmitted helminthiasis, and CWW, Global Network/Sabin and CIDA delegates. The second meeting was additionally attended by delegates from the Inter American Development Bank, the McGill University of Canada, from GlaxoSmithKline, Johnson&Johnson, the Cayetano Heredia Foundation, the Bernard van Leer Foundation, the Catholic Medical Mission Board, the "Mundo Sano" Foundation, Operation Blessing International, Save the Children, Vitamin Angels, INMED ANDET and the Global Health Partnership Initiative.

The following are the conclusions and recommendations adopted in each of these meetings.

Workshop for Training on Regional Guidance for Implementation of Integrated Deworming Actions

The main conclusions were the following:

- The 18 participating countries expressed their interest and commitment to implement, pursue, strengthen, monitor and evaluate deworming activities along the following lines: 1) integration with other public health actions, especially those related to NID control and elimination; 2) integration with sector activities in the framework of health determinants, and 3) promotion of State policies aimed at communities sustainable development.
- Integration offers an opportunity to strengthen health services. Integration with EPI and nutrition initiatives opens a window of opportunity for deworming among preschool-age children while integration with education and healthy schools strategies offers an opportunity for deworming among school-age children. Therefore, it is necessary to further strengthen the coordination between health and education sectors, as it has shown to be a cost-effective intervention.
- During more than five years, several countries in the Region have been implementing deworming against soil-transmitted helminths reaching over 75% coverage; however, impact evaluation is still a challenge.
- The participation of delegates from education ministries allowed for the joint analysis of integrated interventions for soil-transmitted helminthiasis control in prioritized countries; however, it is essential to invite delegates from other ministries and sectors involved in achieving access to safe water, improved sanitation and hygiene to ensure sustainability of soil-transmitted helminthiasis control activities.
- Some countries are already receiving albendazole and mebendazole donations through PAHO/WHO; however, other countries have expressed their interest in such donations and they have requested

PAHO/WHO advocacy so that they may also be extended to other population groups (preschool children, childbearing-age women, adults involved in activities where there is infection risk, etc).

The following were the main recommendations resulting from the workshop:

- Advocate so that soil-transmitted helminthiases be considered a public health priority related to health determinants that should be integrated to countries' development plans based on an inter-programmatic and inter-sectorial approach to ensure sustainability of actions.
- The PAHO/WHO NID regional program should strengthen and widen the coordination among its regional programs to promote integrated technical cooperation for countries including such institutions as the Water and Sanitation Regional Technical Team (PAHO/WHO ETRAS for its Spanish acronym), the strategic fund for critical drugs and supplies, vaccination, nutrition, life cycle, etc.
- Components such as access to safe water, improved sanitation, hygiene and healthy environment should be clearly included as a priority in the framework of an inter-sectorial and eco-systems approach in soil-transmitted helminthiases control.
- Actively link and coordinate soil-transmitted helminthiases control actions with other sectors and different social stakeholders in each country including non-governmental organizations (NGOs), United Nations agencies and international bodies to maximize available resources and expertise.
- Formulate and complete an annual action plan for soil-transmitted helminthiases control in each country (using the PAHO/WHO standardized forms) that should reflect integrated inter-program coordination and planning including information systems, supervision, monitoring, evaluation, social mobilization and health education components.
- Implement and strengthen monitoring and evaluation in all countries including the establishment of baseline studies, the monitoring of process, performance and impact indicators to improve decision making in soil-transmitted helminthiases control, as well as the implementation of actions adjusted to the eco-epidemiological situation of each country.
- PAHO/WHO is called upon to promote the participation of delegates from other ministries in regional workshops and meetings. Likewise, countries are encouraged to convene all those responsible for water, sanitation, poverty reduction and other relevant issues at national and sub-national levels to adopt concrete measures related to health determinants.
- Countries that are receiving drug donations for school-age children are recommended to re-direct the resources thus saved to other soil-transmitted helminthiases control activities such as monitoring and evaluation.
- Countries interested in receiving antiparasitic drug donations should have an operational plan describing planning, implementation, monitoring and evaluation components and including coverage reports.

- PAHO/WHO and partners such as CWW and the Global Network/Sabin are called upon to advocate before the pharmaceutical industry so that their donations be extended to other population groups (preschool children, childbearing-age women, adults at risk, etc.), and special drug formulations for children under five be developed.
- PAHO/WHO should standardize a protocol to request drug donations for the Region of the Americas.

Meeting for Intensifying Integrated Efforts for Control of Soil-Transmitted Helminthiases in the Region of the Americas: Working Together for a Common Goal

The main conclusions of the meeting are listed below:

- Health ministries, NGOs, faith-based organization (FBOs) and other partners have shown interest in coordinating and implementing integrated actions for the control of soil-transmitted helminthiases.
- NGOs, FBOs and other partners attending the meeting ratified their interest in participating in soil-transmitted helminthiases control actions not only through drug donation and distribution, but also through strengthening national and local capacity and helping with training, technical assistance, monitoring and evaluation.
- Weaknesses in the mechanisms and flows of information related to deworming and soil-transmitted helminthiases control activities are seen in the countries (regarding drug donations, deworming coverage reports, monitoring and evaluation, among other).
- There are regional gaps in the monitoring and evaluation of soil-transmitted helminthiases control actions including those related to the impact of water, sanitation and hygiene interventions.
- Protocols, guidelines and standards have been or are being developed by PAHO/WHO and other partners and stakeholders involved in the control of soil-transmitted helminthiases and other neglected infectious diseases including tools to deal with water, sanitation and hygiene topics relevant for the prevention and control of infectious diseases.
- There is a wide variety of educational materials on soil-transmitted helminthiases control produced by health ministries and NGOs, FBOs and other partners.
- Some countries are already receiving drug donations for school-age children through PAHO/WHO. To cover the needs of other age groups such as preschool children, countries are resorting to other alternatives (local purchases, donations from other partners, etc).

These were the main recommendations adopted by participants:

- Health ministries could identify leading areas or groups in soil-transmitted helminthiases (and other NIDs) control to aid them in the exchange and coordination with NGOs, FBOs and other partners as a way to strengthen their leading role.

- PAHO/WHO can play a role as facilitator of dialogues and coordination between countries and NGOs, FBOs and other partners.
- Countries can start mapping NGOs, FBOs and other stakeholders currently implementing soil-transmitted helminthiasis control actions in their territories (who they are, where they act, their structure and resources and the activities they are undertaking).
- Health ministries can define, clarify and disseminate data flows on deworming coverage-related data adjusted to their information systems. It is important that countries deworming coverage reports include activities undertaken by other ministries (for example, education ministries), and by NGOs, FBOs and other stakeholders.
- Health ministries need to strengthen their reporting systems for soil-transmitted helminthiasis control activities (coverage, monitoring and evaluation) to improve the quality of their annual reports at national, regional and global level.
- Health ministries should identify and analyze information from different sources and data bases in institutions and organizations involved in control actions to thus strengthen decision making.
- National governments can explore the use of new technologies to improve the timing and quality of data reporting in soil-transmitted helminthiasis control (mobile telephones, Web-based reporting systems, among others).
- Health ministries need to include process, performance and impact indicators as part of the monitoring and evaluation of soil-transmitted helminthiasis control activities; these activities should count with the participation of other ministries, organizations, universities, research centers and institutions involved in soil-transmitted helminthiasis control.
- PAHO/WHO, together with health ministries, ministries in charge of water, sanitation and hygiene issues, as well as with partners, can help in monitoring and evaluating the impact of integrated actions for soil-transmitted helminthiasis control (including economic evaluation of a WASH integrated package).
- Monitoring and evaluation results should be used at national and sub-national levels to back decision making and modulate interventions.
- Together with other partners, PAHO/WHO can develop and implement a regional workshop on monitoring and evaluation of soil-transmitted helminthiasis control.
- In cooperation with other partners, PAHO/WHO can help to collect and make available to all countries and stakeholders in the Region existing technical and educational documents (regarding health, water, sanitation and hygiene topics) organized as a toolbox.
- It is necessary to map and systematize experiences accrued by countries to get to know and share lessons learnt and good WASH and NID practices.

- Increase regional dissemination and implementation of educational programs emphasizing the link among water, sanitation, hygiene and health.
- PAHO/WHO can advocate for extended drug donations destined to other age groups that would in unifying and facilitating action planning and implementation at country level.

The Pan American Health Organization/World Health Organization wishes to thank Children Without Worms, the Task Force for Global Health, the Canadian International Development Agency and the Sabin Vaccine Institute Global Network for Neglected Tropical Diseases for their financial and technical contribution to these two regional events.

Part 1

Workshop for Training on Regional Guidance for Implementation of Integrated Deworming Activities

INTRODUCTION

In Latin America and the Caribbean (LAC), at least 180 million people live below the poverty line. These impoverished and marginalized populations are often heavily burdened with neglected infectious diseases (NID) and other poverty related infectious diseases. This group of diseases continues to take a measurable toll, not only on families and communities, but on the socioeconomic development of nations.

The three most common types of Soil-Transmitted Helminthiases (STH)⁴ are considered to be present in all the LAC region's countries, with prevalence varying. In 2010, the Pan American Health Organization (PAHO) prepared a report analyzing progress in the control and elimination of lymphatic filariasis, onchocerciasis, trachoma, schistosomiasis, and soil-transmitted helminthiases, which can be eliminated or controlled through preventive chemotherapy. This report concluded that if actions were focused on 18 countries, 94% (12,088,816) of preschool age children and 93.5% (29,927,933) of school age children at risk of STH in LAC could be reached with deworming activities (PAHO 2010). In 2012, PAHO updated these estimates based on the methodology described by the World Health Organization (WHO), concluding that 13.8 million preschool age children and 35 million school age children are at risk of STH infections in the Americas, according to the most current data on access to basic sanitation and safe drinking water.

Epidemiological information on STH is sparse, as these infections are not reported. However, in PAHO's 2011 review of published prevalence rates, some surveys have indicated prevalence higher than 50% in some groups of school-age children and indigenous populations. In addition, these results demonstrated that although intensity of infection is infrequently reported, it has been high enough to be associated with adverse health effects like anemia and physical and cognitive development impairment. For this reason, and according to WHO recommendations, the Region's high-risk countries are being encouraged and offered necessary technical assistance to scale up STH deworming efforts to reach all vulnerable populations.

As stated in PAHO's Resolution CD49.R19 of 2009, PAHO Member States in LAC must reach a deworming coverage of at least 75% of school-age children by 2015 to contribute to achieving the goal of controlling STH. Countries, nongovernmental organizations, faith-based organizations, and other partners have made progress in the integration of deworming into other programs with an intra- and intersectoral approach. However, these actions have been planned and implemented in the absence of guidelines for integrating deworming activities into other programs. Therefore, in 2011 PAHO started the process of developing regional guidelines that could serve as an instrument to facilitate the integration of deworming activities into existing platforms such as the Expanded Program on Immunization (EPI), Integrated Management of Childhood Illness (IMCI), nutrition activities, malaria and tuberculosis control, and Healthy Schools, among others. In addition to facilitating implementation, these guidelines will aid in effective monitoring and

⁴ *Ascaris lumbricoides*, *Trichuris trichiura*, y *Uncinari*

evaluation of STH control in preschool and school age children. In 2011, PAHO, the Inter-American Development Bank (IDB), and the Global Network for Neglected Tropical Diseases (GNNTD), a program of the Sabin Vaccine Institute, issued a joint policy paper titled "A Call to Action: Addressing Soil-transmitted Helminths in Latin America and the Caribbean," which describes the devastating impact of intestinal worm infections in Latin America and the Caribbean and highlights multiple opportunities to scale up deworming programs at low cost, but with high economic returns for the health and well-being of children and adults throughout the hemisphere, through both intra- and intersectoral approaches.

To incorporate best practices in the state of the art of integrating deworming programs into health and education programs through intersectoral actions in our regional context, and to put in practice the recommendations in the joint policy paper, PAHO completed a document on "Regional Guidance for Implementation of Integrated Deworming Actions." It organized the first training workshop based on this document, with the participation of delegates from the Ministries of Health and Education of the 18 priority countries, PAHO's focal points for control of NIDs in those countries, and the regional advisers for the following programs: Expanded Program on Immunization, food and nutrition, Environmental Health in Emergencies and Disasters, and the Child Health and IMCI Program, as well as the WHO adviser on control of soil-transmitted helminthiasis. The general objective of the workshop was to promote country ownership to intensify integrated efforts for the control of soil-transmitted helminth infections and to promote the implementation of integrated deworming actions within existing health platforms in the Region of the Americas. This will help advance the goals for the control and elimination of Neglected Infectious Diseases established by PAHO Member States in PAHO Directing Council Resolution CD49.R19 of 2009 and the WHO Roadmap on Neglected Tropical Diseases of 2012. PAHO also convened a regional meeting of nongovernmental organizations, partners, and other international cooperation entities in order to intensify integrated efforts for the control of soil-transmitted helminth infections in the Region.

This report presents the minutes and conclusions of the training workshop and partners meeting on this topic held in Bogota, Colombia, from 13 - 17 May 2013, which will contribute to advocacy, coordination, and the integration and implementation of programs for the control of soil-transmitted helminth infections in the Region.

OPENING SESSION

Dr. **Guillermo Guibovich**, Health Evidence and Disease Control Advisor at the Pan American Health Organization in Colombia, welcomed the participants on behalf of Dr. Teófilo Monteiro, PAHO's Representative in Colombia and wished them a pleasant and productive stay. He expressed his satisfaction at evidence of progress in efforts and guidelines for defining integrated activities for the Region of the Americas that will make it possible to reduce prevalence of intestinal parasites in the countries.

Dr. **Antonio Montresor**, Department of Control of Neglected Tropical Diseases of the World Health Organization, welcomed the participants and underscored the importance of control of soil-transmitted helminth infections for the Region of the Americas. He drew attention to significant donations from pharmaceutical companies for combatting soil-transmitted helminth infections in children under age 15 in different countries, and particularly in Latin America and the Caribbean, where several countries have a great deal of experience that can be shared with other countries to improve deworming coverage levels.

Dr. **Ildelfonso Cepeda**, Assistant Director of Communicable Diseases of the Ministry of Health and Social Protection of Colombia, welcomed those present on behalf of the Minister of Health and Social Protection, Dr. Alejandro Gaviria Uribe, and wished them a pleasant stay and productive sessions. He noted that the Ministry of Health and Social Protection is implementing integrated activities as set out in its Ten-year Public Health Plan, which provides for the integration of several structured programs—such as tuberculosis and leprosy, among others—which include helminth infections in the group of neglected diseases with specific targets for reducing morbidity. He thanked the Pan American Health Organization and the World Health Organization for their support in achieving the meeting's objectives.

Dr. **David Addiss**, Director of the NGO Children Without Worms, thanked the organizers and participants for their decision to work on the control of soil-transmitted helminths in children. He described how the notion of global health emerged in the 1990s in relation to public health and international health and that by definition, global health transcends national borders. Global health seeks equity, requires international cooperation across borders, and includes multidisciplinary actions for both prevention and clinical treatment.

He noted that we should approach soil-transmitted helminth infections from various perspectives. It is a public health issue with clinical effects including intestinal obstructions, nutritional deficiencies, and anemia. Control of helminth infections has immediate effects, such as improved cognitive function, that contributes to national and regional development. It can also be regarded as a form of economic and social empowerment. A recent study in Kenya showed that deworming leads to weight and height gains of up to 25% in the children treated. Deworming can also be viewed as a humanitarian action.

He mentioned a recent meeting at the Center Carter, where global health was described as governed by the value of compassion, rooted in the value of interconnectivity. Global health and compassion endeavor to build bridges between people separated by geography, economics, politics, and so forth. This is an apt description when it comes to control of soil-transmitted helminthiasis, since compassion is what motivates the participants to join forces and alleviate the suffering caused by these infections. He thanked those present for their commitment and for the passion they bring to transforming this suffering and seeking out the best experiences, so that together we can learn how to move forward.

Karen Palacio, Advisor at the Global Network for Neglected Tropical Diseases of the Sabin Vaccine Institute, expressed her gratitude for the opportunity to participate in the workshop on operational guidelines for the implementation of integrated deworming activities. She acknowledged PAHO's leadership in the control and elimination of neglected infectious diseases and as a key partner in the global network. She recognized the presence of

professionals working on the control of NIDs, especially soil-transmitted helminth infections, as well as the representatives of the Ministries of Health, PAHO, WHO and *Children Without Worms*, among others.

She underscored the problem it represents for the 49 million pre-school and school age children at risk of contracting these infections. They are part of the unfinished international public health agenda, whose consequences in terms of discrimination, isolation, health status, and poverty extend beyond the health sector, since they affect education with impacts as severe as reducing future earning power.

But there are opportunities, such as drug donations and the availability of new technologies and strategies. The result goes beyond controlling the disease itself, since it enhances productivity and family incomes, breaking the vicious circle of poverty. Success is possible if we keep our sights on the right priorities, as Honduras and Brazil have done.

Finally, she identified five areas to which the participating countries can commit: 1) development of national plans for control of soil-transmitted helminth infections; 2) integration with other strategies and programs; 3) coordination with other stakeholders such as foundations, NGOs, FBOs, and the private sector; 4) innovative trans-sector partnerships; and 5) promotion and advocacy at several levels.

Dr. **Steven Ault**, Neglected Infectious Diseases Advisor at the Pan American Health Organization, conveyed greetings on behalf of Dr. Luis Gerardo Castellanos, Coordinator of the Prevention and Control of Communicable Diseases Program at the Pan American Health Organization, and welcomed those present to this training meeting on the implementation of integrated deworming programs. He noted that in recent years, a set of specific guidelines has been developed to help countries plan, expand, and make deworming accessible to children living in precarious health conditions.

The guidelines contain the word *integrated*, which refers to the most effective way of integrating deworming into other activities such as health education, hygiene promotion, and improving the availability of drinking water and sanitation, in order to reduce the burden of parasites on children and families through innovative actions. The word also entails different ways of delivering health services to children beyond providing tablets, including immunization, nutritional supplementation, and health education, among others.

Potential cooperation with national programs for the elimination of other tropical diseases such as schistosomiasis will also be examined, in addition to other platforms that can aid in service delivery, such as Integrated Management of Childhood Illness, Vaccination Week in the Americas, and the Healthy Schools program.

Coordination and planning should also occur at the intersectoral and trans-sectoral level, such as joint efforts by the ministries of health and education, whose national experiences can serve as model for many of the countries present.

We also have certain advantages that we did not have several years ago, namely, donations from pharmaceutical companies to the countries for deworming children under the age of 15. This is an opportunity to coordinate all of the efforts mentioned in order to improve the health, education, and development of millions of disadvantaged children in Latin America and the Caribbean.

Panel on Expectations from the Meeting

Observations by some participants on the meeting's objectives:

- Paraguay: We are delivering treatment in the schools, but our context is one of social problems, asymmetries, and extreme poverty. The physician at the clinic cannot, during a 15 or 20 minute consultation, address a health issue that involves a whole host of determinants outside the health sector.

- Colombia: The expectation of the Ministry of Health and Social Protection is to be able to include other institutions, whether within the health sector—such as the National Institute of Health and the National Institute of Food and Drug Monitoring—and, with technical cooperation from PAHO, we would like to expand the work with other ministries, such as housing and education, among others. Our expectation is that we would steer this effort.
- Brazil: We work together with the Ministry of Education, and especially with the Ministry of Social Development, on the implementation of a government program called *Brazil without Misery*. We develop our integrated plans in this framework, as part of a government plan.
- Honduras: We are currently organizing a deworming campaign for school-age children that will take place next July, so our expectations have to do with how we can integrate these activities. We are wondering how to go about conducting an evaluation following the interventions and how we can act on factors that influence the problem of parasites. We appreciate the invitation and hope to take away a plan for the country that we can work on with the technical roundtable on neglected diseases in Honduras.
- Ecuador: We are in the midst of a health sector reform, which is currently focused on strengthening public institutions. The challenge is to compete with private providers. The health model requires that we take a preventive approach to care, so that physicians will have a set percentage of hours that must be devoted to treatment and to prevention. We believe that factors that influence the problem should be integrated, since treatment delivery alone is not enough. We want the participation of the different sectors involved. We are creating a multisectoral platform for other public health problems, such as control of wildlife rabies and dengue.

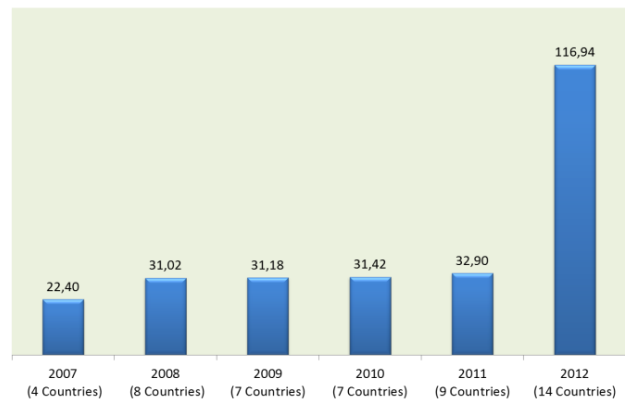
Conclusion: The key words are: *integrated* into other actions; it should be intersectoral; it should be linked to social policies for development and poverty reduction; and that right now conditions are ripe for the control of soil-transmitted helminth infections. The countries in the Region of the Americas are working on national plans for poverty reduction through increased access to drinking water; increased access to basic sanitation; improved nutrition, health, and education; improvement of and access to decent housing, and human rights. Health is a cornerstone of sustainable development policies in our countries. This is not an isolated intervention, but health can lead intersectoral coordination efforts. The idea is to develop strategies tailored to national circumstances and each country's needs and available resources.

PROGRESS, GOOD PRACTICES, AND CHALLENGES ON DEWORMING ACTIVITIES TO COMBAT SOIL-TRANSMITTED HELMINTHS IN LATIN AMERICA AND THE CARIBBEAN

GLOBAL CONTEXT OF DEWORMING: ACTIONS FROM HERE TO 2020⁵

- In 2001 the World Health Assembly adopted Resolution WHA54.19, urging the countries to eliminate schistosomiasis and soil-transmitted helminth infections as a public health problem. It calls for a differentiated approach that prioritizes treatment of women and children and promotes access to safe water, sanitation, and health education through intersectoral collaboration. It establishes a minimum target of chemotherapy administered to at least 75% of at risk school-age children by 2010.
- Adopted by PAHO's 49th Directing Council in 2009, Resolution CD49.R19 also includes the target of preventive chemotherapy administered to at least 75% of at risk school-age children and notes the need for intersectoral collaboration to promote access to drinking water, sanitation, and health education. Both documents provide the underpinnings for the overall approach required. It is necessary to identify specific resources to reach the target for control of these parasites as a public health problem.
- In 2005, a milestone was reached in reducing soil-transmitted helminth infections in children thanks to a donation of mebendazole by Johnson & Johnson. In 2007, CWW distributed medication to 4 countries, and from 2008 to 2011, it delivered over 30 million doses to 7 to 9 countries each year (Figure 1).
- In 2012, nearly the number of doses distributed to 14 countries nearly quadrupled after Johnson & Johnson increased its donations. Glaxo-Smith-Kline then announced a donation of 400 million doses annually to reduce soil-transmitted helminth infections. A total of 600 million doses annually are available to treat school-age children, amounting to 5 billion doses pledged up until 2020.

Figure 1. Doses of mebendazole donated (in millions) and number of countries supported by Children Without Worms, 2007-2012

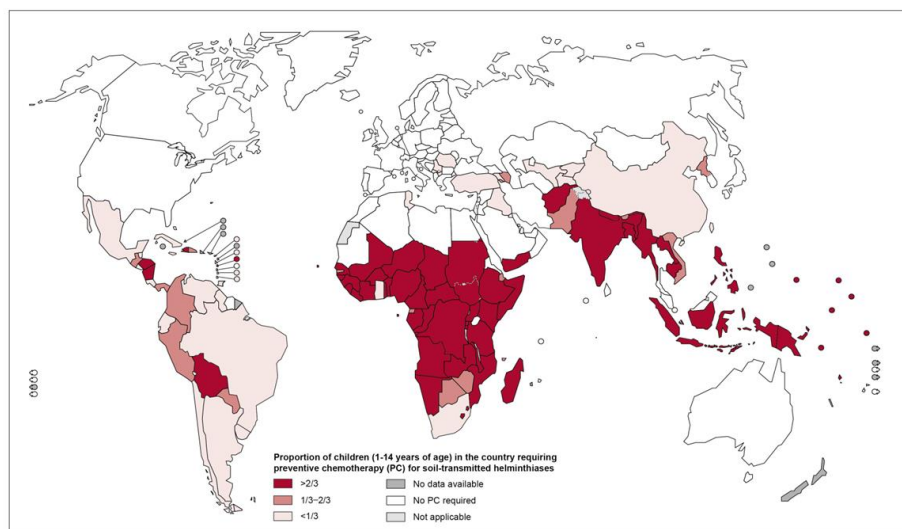


Source: Children Without Worms, 2013

- In addition to this increase in the amount of medications available, we now have more financial and human resources, as well as the know-how to target funds more effectively. School-age children are the primary target and schools are the best platform for medications delivery. The World Health Organization provides good guidelines.
- Based on World Health Organization statistics for 2011, the countries whose child populations require the most attention and delivery of preventive chemotherapy to combat soil-transmitted helminths are shown in red in Map 1.

⁵ Dr. David Addiss, Director of the NGO Children Without Worms.

Map 1. Proportion of children (1-14 years of age) in the country requiring preventive chemotherapy for soil-transmitted helminthiasis worldwide, 2011



Source: Neglected Tropical Diseases Program, WHO.

- Switzerland’s Tropical Diseases Group conducted a study with incomplete data and, using a mathematical model to estimate prevalence of *Ascaris Lumbricoides* and *Trichuris trichiura*, it found conclusively that prevalence varies by region.
- Drinking water, hygiene, and basic sanitation play a clear role in sustaining and consolidating the successes achieved through mass treatment. In a study of the data for these variables, the Swiss Tropical Research Group demonstrated a strong correlation between access to basic sanitation and protection against soil-transmitted helminth infections.
- If we are to make global progress towards control of soil-transmitted helminth infections, we must begin with the current situation (Table 1):

- Nearly 609 million school-age children are at risk
- Pharmaceutical donations are available
- We have targets and goals up to 2020
- We have management guides, monitoring parameters, and so forth.

- For 2011, 31% of these 609 million children were treated at the global level (187 million).
- 64% of them were treated through programs to eliminate other diseases like lymphatic filariasis, rather than national programs for the control of soil-transmitted helminth infections.
- 31% (81 million) of the total 266 million preschool age children were treated in 2011, 29% of them through programs for the elimination of lymphatic filariasis. Another percentage was through immunization and other integrated programs

Table 1. Progress in the control of soil-transmitted helminth infections

Program component	Group at Risk		
	Preschool age children	School-age children	Women of childbearing age
At risk of becoming ill (in millions)	266	609	~565
Drug donations		✓	
WHO goals and targets up to 2020	✓	✓	
WHO implementation guides	✓	✓	
WHO M&E guides		✓	
Millions treated in 2011 (%)	81 (31%)	187 (31%)	~80 (~14%)
% of treated children through the LF program	29%	64%	~98%

Source: Addiss David, Children Without Worms, 2013

- Women of childbearing age were the group with the lowest coverage levels. Approximately 565 million women of childbearing age are at risk, yet very few countries have STH control measures in place for this group; nonetheless, these individuals are accessing the medications through programs for the elimination of lymphatic filariasis. From our perspective, actions from now until 2020 include, among others:
- Scale up treatment of school-age children. We have treatment donations for this group. This is perhaps the most important approach to start with.
- Scale up treatment of other at risk groups.
- We should also clarify our approach in the sense of determining whether we are really conceiving of control of STH as a school health component or as an integrated public health initiative.
- Finally, we need coordinated actions focused on specific targets.
- A reading of the 2001 World Health Assembly Resolution reveals a certain degree of specificity according to transmission areas: the targets vary by transmission area. We suggest that many countries of the Region can do much more than merely reach the 75% coverage target. We therefore suggest that their planning processes include different STH control goals in different categories (Chart 1):

Chart 1. Potential STH control targets for 2020

Category	Characteristics					Targets/Objectives
	Disease burden	Political will	Technical capacity	Financial resources	Water, sanitation, and hygiene infrastructure	
Sustainable	Low	High	Excellent	Adequate	Good – may require some improvement	<ul style="list-style-type: none"> • No STH related disease • STH below the threshold for MDA • Transmission interrupted in some places
Complete national scale-up possible	Moderate	High to moderate	Good	Additional resources may be required	Needs improvement	<ul style="list-style-type: none"> • MDA in all at risk areas • MDA no longer necessary in some areas • Improved water, sanitation, and hygiene infrastructure
Strongly affected (fragile, in conflicts)	High	Often low	Often low	Inadequate	Poor	<ul style="list-style-type: none"> • 75% coverage target • Improved health in the cohort of children treated • Improved capacity in the education and health sectors

Source: Adiss David, Children Without Worms, 2013

- In strongly affected countries with a high burden of the disease, little political will, poor response capacity, and problems with water and sanitation infrastructure, it may be that we are only able to achieve the 75% coverage target (and it can be no less than that). This would improve the health of the cohorts of children treated and strengthen the capacity of the health and education sectors.
- Another category is countries with a complete national scale-up that includes all at risk areas. In these countries, preventive chemotherapy may no longer be required in some areas and it may be necessary to improve the quality of water, sanitation, and hygiene.
- Many of the countries could fall into this sustainable category and they should consider what their 2020 targets should be. The disease burden is relatively low; political will is high; and they have good technical capabilities; financial resources may not be totally adequate, but could be increased; and water and sanitation infrastructure is good and can be improved. In such cases, the targets may be no STH related illnesses by 2020 and that STH levels are below the threshold for mass drug administration. This could be sufficient to sustain the low levels and we may be able to interrupt transmission in certain areas.

PROGRESS ON DEWORMING TO COMBAT STH IN LAC: STATE OF THE ART, CHALLENGES, AND OPPORTUNITIES⁶

NIDs and the working framework for the control of soil-transmitted helminth infections in Latin America and the Caribbean

- Neglected Infectious Diseases affect most groups and communities living in poverty and with a certain degree of disadvantage, as well as indigenous communities and other ethnic minorities. The situation of certain particularly vulnerable groups, such as women and children, is characterized by the adverse effects of these diseases, including impaired cognitive, physical, and nutritional development and poor school attendance. Adults experience reductions in job productivity and family and individual incomes, as well as problems related to social stigma.
- The interventions available to us for the elimination and control of these diseases are closely tied to what we call the *social determinants of health*, which include lack of access to water, education, income, transportation, safe housing, and health services.
- Combating and controlling these diseases throughout our region is a moral imperative. It is one of the best investments we can make in education, especially for primary school children; in economic development, particularly in poor, rural communities; and of course, in public health.
- WHO has established targets for the control, elimination, or eradication of 17 neglected infectious diseases by 2020. In our Region, 13 diseases are in the elimination stage and just one in control: soil-transmitted helminth infections.
- Six lines of action have been established for this, one of which is *preventive chemotherapy*, which consists of distributing anthelmintic drugs to entire eligible at risk populations. The others are: *innovative and intensified disease management; integrated vector management; verify the availability of safe water, sanitation, and personal hygiene; integrate veterinary public health services for zoonosis control; and finally, promote and work towards strengthening capacity in the countries.*
- WHO has two key publications to guide the Region: the Regional Roadmap and the London Declaration on Neglected Infectious Diseases. In addition, just over 20 partners worldwide are supporting implementation of the Roadmap.
- Our Region has adopted a significant number of resolutions on neglected infectious diseases, including resolutions on: onchocerciasis (2008); 12 NIDs (2009); congenital syphilis (2010) and Chagas disease (2010). A Strategic Plan has been developed to prioritize the elimination and control of these diseases in the Region. A guide has been prepared for countries to develop integrated action plans for the elimination and control of these NIDs. At this meeting, we will be working on the Operational guidelines for the implementation of integrated deworming activities.
- WHO has other guidelines available, along with a preventive chemotherapy database to support each country and monitor progress. Donations of albendazole and mebendazole are available free of charge to countries that request them using a standardized form. A technical support team is in place comprised of PAHO staff and the focal points in each of its representative offices.

Situation of soil-transmitted helminth infections in Latin America and the Caribbean

- In our region, nearly 50 million children ages 1 to 14 years are considered to be at risk of contracting soil-transmitted helminth infections: almost 14 million are preschool age and just over 35 million are school-age children. These estimates are based on the percentage of the population that lacks access to improved basic sanitation facilities, differentiated by rural or urban area, and on the WHO algorithm published in the Weekly Epidemiological Report of June 2011.

⁶ Steven Ault: *Neglected Infectious Diseases Advisor of the Pan American Health Organization.*

- In order to prioritize which countries can make the greatest contribution to bridging these gaps, we have divided the countries into four groups based on their at risk population (See Chart 2).

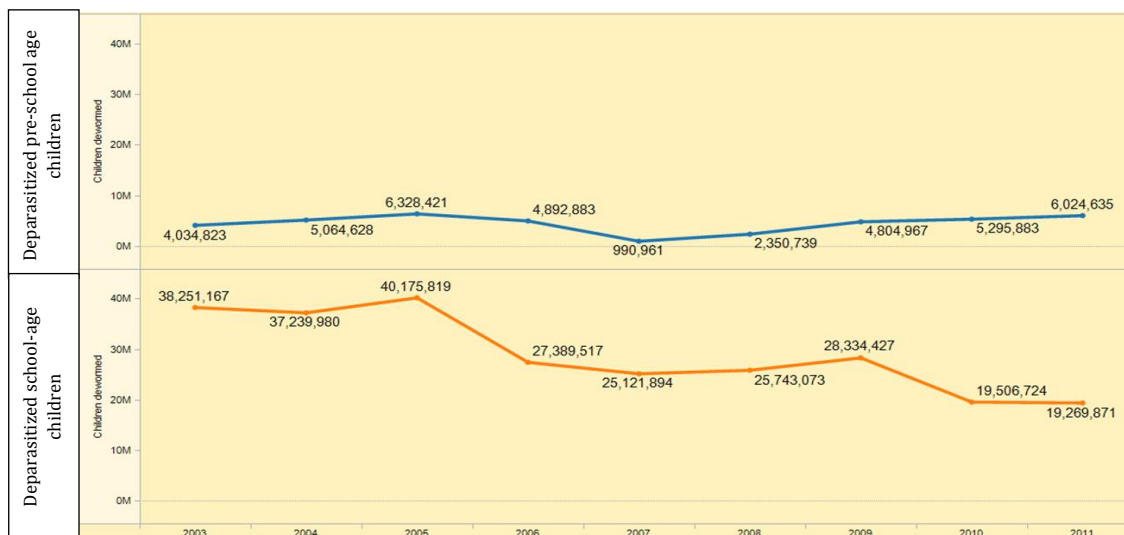
Chart 2. Groups of countries with the largest number of children at risk of infection

Group	At risk population	Countries
1	71.9% of preschool children and 72.3% of school-age children in the region are concentrated in this group of countries	Bolivia, Brazil, Dominican Rep., Ecuador, Guatemala, Guyana, Haiti, Mexico, Peru, Saint Lucia, and Suriname
2	19.3% of preschool children and 18.5% of school-age schoolchildren in the region are concentrated in this group of countries	Belize, Colombia, El Salvador, Honduras, Panama, and Venezuela
3	7.8% of preschool children and 7.5% of school-age children are concentrated in this group	Argentina, Bolivia* (El Chaco), Nicaragua, and Paraguay,
4	0.97% of at risk preschool children and 1.03% of at risk school-age children in the region	Antigua and Barbuda, Bahamas, Barbados, Chile, Costa Rica, Cuba, Dominica, Grenada, Jamaica, Saint Kitts and Nevis, Saint Vincent and Grenadines, Trinidad and Tobago, Uruguay

Source: Steven Ault, PAHO, 2013

- By focusing on the first two groups of countries, we could reach 90% of at risk children in our region.
- Deworming coverage of preschool children has remained stable, while coverage of school-age children has shown a downward trend (see Figure 2).

Figure 2. Deworming coverage in children under 15 in the Region of the Americas, 2003-2011



Source: Steven Ault, PAHO, 2013

- The graph above is biased due lack of reporting by a couple of countries; that said, in 2011, nine countries reported deworming activities: the Dominican Republic and Nicaragua each reported over 1 million children dewormed; Haiti reported over 2 million and Mexico over 5 million.
- In 2011, 25 million children were dewormed in nine countries: 6 million preschool children and 19.3 million school-age children. There is still a long way to go, however; an estimated 49.3 million children are at risk, 89% of which are located in 9 countries (BOL, BRA, COL, GUA, HAI, HON, MEX, NIC, PER) with Brazil, Colombia and Mexico requiring the most effort, since they account for 53% of at risk children.
- A significant number of countries are already updating epidemiological data on prevalence and intensity of infection (BOL, BRA, COL, ECU, ELS, GUY, HON, PER, SUR)

- Several of the countries that are carrying out deworming activities are purchasing medicines. Five of 30 countries are currently receiving PAHO/WHO donations (BRA, DOR, HAI, NIC, and PAR).

Challenges for the control of soil-transmitted helminth infections

- It is important to have baseline information on prevalence and intensity of infection: information for decision-making.
- Develop and implement comprehensive action plans with an ecosystemic approach to the social determinants of health.
- Include actions for the control of soil-transmitted helminth infections in plans for the control and elimination of neglected infectious diseases and in poverty reduction plans.
- Plans should include a mass deworming component for at risk areas and populations that is integrated into other public health activities.
- Coordinate activities for the control of soil-transmitted helminth infections, including deworming, with regional partners and allies: ministry of education and other ministries, NGOs, and national and international agencies, among others.
- Implement, maintain, and strengthen monitoring and evaluation as a strategic component to inform decision-making.

Opportunities to make progress in control

- Preventive chemotherapy and distribution of antiparasitics are part of the general picture, but they must be integrated into other public health activities. Here we can see the importance of integrating activities that act on certain social determinants of health, such as: improving safe water and sanitation, basic housing, health education, hygiene, hand washing, and use of footwear. These activities should be undertaken with the relevant partners. This is the only way we will have an impact in the medium and long terms that is sustainable and can improve the health of the population.
- Figure 3 shows what can be accomplished in the 20 priority countries in groups 1, 2, and 3, if activities to control soil-transmitted helminth infections are implemented in an appropriate and timely manner. The color coding indicates which countries already have a baseline (brown); which are already delivering preventive therapy in one or more regions (orange); which have conducted an impact assessment or are already planning activities for this (dark green). Finally, at the end of the process, the light green indicates what we hope will be post-treatment epidemiological surveillance, where the population is under control and prevalence is under 20% and sustainable.

Figure 3. Control of soil-transmitted helminth infection. Projections up to 2020



Source: Steven Ault, PAHO, 2013.

Some countries, then, have been identified as having the potential to reach the target more quickly than others, but the hope is that all countries will be in the light green range and able to improve the health of our children.

BEST PRACTICES IN LAC IMPLEMENTING DEWORMING ACTIVITIES TO COMBAT SOIL-TRANSMITTED HELMINTHS

Mexico case study⁷

Background

- In 2007, parasitoses were among the top twenty causes of morbidity, with *Trichuris trichiura* and *Ascaris Lumbricoides* being the most common helminths, and *Entamoeba histolytica* and *Giardia Lamblia*, the most common protozoa infections.
- As of 2011, which are the most recent reported figures, helminth infections ranked 13th among the top 20 causes of morbidity in the country, and were in seventh place for the group aged 5 to 9 years, (incidence = 586.92 per 100,000 – n = 57,744 cases).
- Mexico decided to implement deworming as a strategy to improve overall health status by preventing comorbidities—such as malnutrition, anemia, inability to focus—in children under age 14 with parasites; improving motor development, growth, and language development, among others; and reducing school absenteeism and transmission.

Implementation

- The target population for 2012 was 18,403,339 children ages 2 to 14 years. In 1993, activities focused on the municipalities with the lowest rankings on the Human Development Index and the highest incidences of diarrheal diseases. Currently these activities are carried out country-wide during the second and third National Health Weeks, when intensive universal vaccination and Vitamin A administration takes place.
- This activity has been carried out for the past 20 years, beginning in 1993, when we first began to integrate it into were then called National Vaccination Weeks. Since then, we have implemented integrated activities with other programs or platforms.
- Coverage was 55.07% in 2003 and hovered around 60% for the following three years. We do not have data for 2007 and 2008, but since 2009, coverage has been close to 100%. In 2011, it was 98.2%.

Support and financing

- All health sector staff participate in these activities. We use albendazole in a 400 mg suspension and 200 mg tablets.
- Each State or Federative Entity acquires the medicines through its State Health Secretariat, with its own resources. We conduct monitoring at the central level to make sure they purchase the appropriate amounts to achieve total coverage.

Lessons learned

- Mass deworming in Mexico has had a favorable impact on reducing morbidity from soil-transmitted helminth infections.
- We provide albendazole in 2 doses per year, and have observed that it is effective and safe.
- Including this activity in the National Health Weeks has had a greater impact than carrying it out separately, since it is possible to convene large swaths of the population, leading to better treatment coverage. Teachers are given training two weeks before each National Health Week in order to reinforce dissemination of information to the communities.

⁷ Dr. Paulina Saldaña Hernández, Secretariat of Health of Mexico—Head of the Universal Vaccination Program

Challenges

- Evaluate the impact of deworming during National Health Weeks: in 2007 we had identified the at risk community for each helminth. At present, we do not have them broken down.
- Scale up regular medication coverage to the entire population, since only we are covering the group ages 2 to 14 years.
- Design innovative strategies to improve distribution and acceptance among users, since there have been years in which we have not achieved the desired coverage levels.

Next steps

- We expect to conduct monitoring and evaluation of the impact of deworming in the country. In fact, with PAHO's support, we are poised to move ahead with an evaluation of its impact on prevalence and intensity of soil-transmitted helminth infections.

Nicaragua case study⁸

Background

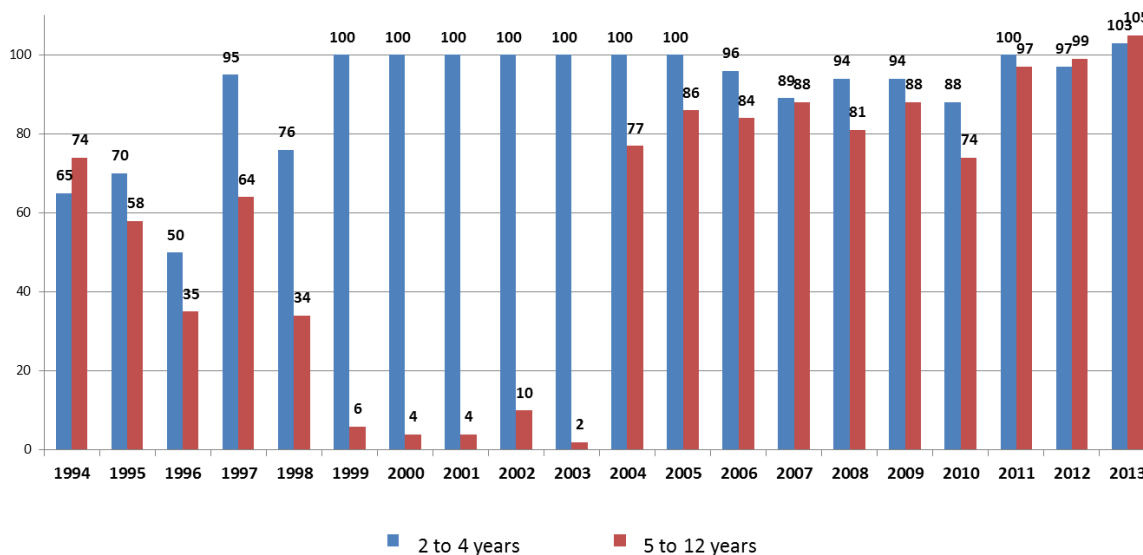
- Since 1994, the government has held deworming campaigns throughout the country. It delivers a dose of antiparasitic medicine as an activity integrated into its Annual Vaccination Campaigns.
- Drug donations are available for distribution in schools and communities thanks to the support of Children Without Worms and Save the Children.
- The Pilot Schools Project was carried out in the Silais in Chinandega and León departments; its integrated approach includes: deworming, education, and improvements to school sanitation infrastructure (2 years, culminating in 2010, and in 3 schools).
- The Pilot Schools Project is being implemented nationally, with funding from the Izumi Foundation through Children Without Worms and PAHO: deworming and education.
- The most common helminth infections are *Trichuris trichiura* and *Ascaris Lumbricoides*. According to referenced studies between 1996 and 2012, prevalence of *Ascaris* has fluctuated between 1.6% (Vanegas and Vallecillo, 2010, San Lucas) and 44% (Martínez, 2008, Bilwi schools of Bilwi). Prevalence of *Trichuris* in the same set of studies ranged from 1.6% (Vanegas and Vallecillo, 2010, San Lucas) to 74% (Martínez, 2008, schools of Bilwi). The Atlantic region is the most impoverished and has higher prevalence rates.

Implementation

- The target population this year is 1,484,723 schoolchildren nationally, in 18 Silais. Implementation is focused on: reducing the parasitic burden in preschool-age (2-4 years) and school-age children (5-12 and/or 14 years old) throughout the country.
- Deworming is administered individually during every day sick visits to the health services and is integrated with National Vaccination Campaigns (Jornadas Nacionales Populares de Vacunación) and the Healthy Schools strategy.
- Deworming campaigns (Jornadas Populares de Desparasitación) commenced in 1994, with 3 campaigns during the period. From 1995 to 2001, two deworming campaigns were held annually and from 2002 to the present, only one is held each year.
- Figure 4 shows trends in the antiparasitics distribution coverage of the deworming campaigns.

⁸ Dr. Octavio Lenin Pérez Delgadillo, Coordinator of the Neglected Infectious Diseases Component, Ministry of Health of Nicaragua

Figure 4. Antiparasitics distribution coverage in children under age 12 during National Deworming Campaigns, Nicaragua, 1994 to 2013



Source: Ministry of Health, Nicaragua

Support and financing

- As a government strategy, the participation of key stakeholders is critical to its success: in addition to the Ministry of Health, participants include the Ministry of Education, the school community, community organizations and donors (Mainel - Spanish funding, Children Without Worms, PAHO, IZUMI, and Save the Children).
- 22,413 health sector staff are involved, 36,552 members of community organizations, and 63,969 members of state and local institutions and agencies.
- Albendazole or mebendazole is used. This year, 1,554,801 doses were administered to children ages 2 to 12 years (up to 14 years). This figure has gradually increased since 2007, when 1,263,595 doses were distributed.
- The country acquires these medicines through donations and purchases with Ministry of Health budget allocations.
- Deworming activities during vaccination campaigns are funded through Ministry of Health budget allocations and in schools, with local resources.
- Donors provide assistance for the preparation of materials and infrastructure improvements.

Lessons learned

- The dates for the preparatory activities should be set, taking into account information needs at all levels and should be followed during the campaign itself, so as not to hamper the operations of local teams.
- Implementation of local promotion and information strategies was key to the success of these activities in the Silais.
- Coordination with the Health Supplies Center is critical for expediting procedures to ensure that supplies are available in a timely manner for the campaign.

- Teamwork on the part of the various offices and programs is key to ensuring that the targets for the national integrated campaign are met at all levels.

Challenges

- Reduce the parasitic burden in priority groups.
- Improve the nutritional status of children ages 2 to 12 years throughout the country by acting on soil-transmitted helminth infections.
- Transfer know-how to the community on hygiene and sanitation measures for the prevention of soil-transmitted helminth infections.
- Carry out Pilot Schools projects at the national level, with a comprehensive approach that includes deworming, education, and improvements to sanitary infrastructure.
- Measure the impact of the activities implemented.

Next steps

- Commence prevalence studies in 33 schools around the country, with PAHO's support.
- Raise funds to implement this strategy in an integrated and sustainable way.

Dominican Republic case study⁹

Background

- Parasitic diseases are among the 15 leading causes of morbidity, especially in children. According to a PAHO report from 2009 (Epidemiological profiles of NTD in LAC), prevalence in the Dominican Republic was 55.3%.
- A bibliographic review of studies carried out between 2004 and 2009 found that:
- Approximately 31% of children ages 1 to 14 years suffer from anemia.
- 50-60% of our children are infected with at least one type of parasite.
- More than half of these parasitized children are infected with more than one type of parasite.
- Intestinal parasitism occurs more frequently in children ages 6 to 10 years.
- Parasitic infections are more prevalent in second graders.

Implementation

- Deworming of school-age children is carried out nationwide. The program files contain data on deworming of school-age children dating back to 2005, although government officials report that years ago (Trujillo—compulsory use of footwear) the government administered antiparasitics to schoolchildren.
- This activity is integrated into the public health sector's school health and nutrition program. This year we started working with the Expanded Program on Immunization (EPI).

⁹ Dr. Lourdes McDougall Alarcón, Chief of the Intestinal Parasitosis Program of the Ministry of Public Health.

- The target population is identified based on figures from the National Statistics Office (ONE by its Spanish acronym). There are 2,076,257 children ages 5 to 14 years, and 633,859 children ages 2 to 4 years. According to Ministry of Education statistics, 92% of children are registered in elementary school (1,910,156); 75% are attending public schools (1,432,617); 25% are attending private schools and semi-official charter institutions (477,539); and 40% are in early childhood education (253,544). The school is the best setting to reach these age groups.
- Table 4 presents figures on distribution and coverage of albendazole from 2005 to 2012.

Table 2. Distribution and coverage of albendazole, Dominican Republic, 2005 to 2012

Year	Albendazole 400 mg	Coverage
2005	2,183,624	108%
2006	2,034,027	100.6%
2007	579,895	28.6%
2008	1,612,665	79.3%
2009	1,441,414	70.1%
2010	1,536,770	70.9%
2011 (round 1)	1,526,500	74.3%
2011 (round 2)	1,472,400	71.7%
2012	1,477,274	71.5%

Source: CENCET/National Parasitology Program

Support and financing

- The Ministry of Education, through the Student Welfare Institute provides essential support. The World Food Program (WFP) has also assisted with antiparasitics donations.
 - The Ministry of Education's Nutrition Department has also provided assistance, especially through a donation from Food for the Hungry—DR (FHDR).
 - Physicians monitor adverse effects through the School Health Department.
 - Others, such as NGOs, organized civil society, Lions Club, industries.
 - The medicine is acquired through direct purchases or bidding processes through the Ministry of Education and the Ministry of Health, with its own funds and sometimes through donations.
 - Albendazole is used, in a 400 mg single dosage, preferably chewable for children.

Lessons learned

- Inter-institutional coordination: health/education
- Coordination with other public health programs: School Health/Nutrition/EPI
- Compliance with treatment, since the children accept the medication and mothers want their children to be dewormed.

Main challenges

- It is not identified as a public health problem (activity with social impact), which means that other programs such as the Expanded Program on Immunization have more advantages and impact.
- Inter-institutional integration. Some physicians are resistant to having teachers administer the medication, especially when it comes to monitoring adverse effects.
- Significant funding shortfalls for procurement of the medication.
- Poor integration of private elementary schools.

- Extending coverage to school-age children who are not enrolled or do not attend school.
- Scale-up deworming to reach preschool age children.
- Effectively promote activities focused on the environment, drinking water supply, and promotion and prevention that amplify the impact of antiparasitic medications.

Next steps

- Conduct monitoring and evaluation of the impact of deworming in the country (prevalence and intensity survey)
- Integrate private elementary schools.
- Integrate non-enrolled or absentee school-age children (8%)
- Scale-up of deworming activities to cover preschool age children
- Standardize implementation of biannual deworming campaigns.
- Scale up deworming campaigns to cover other population groups considered of interest, such as pregnant women or agricultural workers.
- Integrate deworming into other interventions to combat neglected and non-neglected diseases with which synergies can be created.
- Effectively promote activities focused on the environment, drinking water supply, and promotion and prevention that amplify the impact of antiparasitic medications.

Belize case study¹⁰

Background

- In 1968, an intestinal parasitosis survey was conducted in two communities in Belize. According to Petana's findings, prevalence rates were: *Ascaris Lumbricoides*: 43%; *T. trichiura*: 40%; *E. histolytica*: 9%; *Ancylostoma*: 7%; *Hymenolepis nana*: 6%; *G. lamblia*: 6%; *S. stercoralis*: 2%; and *Enterobius vermicularis*: > 1%.
- In 1998, the University of Health Sciences conducted a survey on intestinal parasitosis in Belize. This study found prevalence of intestinal parasites to be 76%, similar to Petana's findings (74%) 30 years before (1968) in midwestern Belize. The highest prevalence rate was for uncinariasis (55%).
- In 2005, a parasitological study was conducted to establish a baseline (R. Kaminisky, J. Marengo, and P. Castle). Prevalence was 60.2%. The highest prevalence rate was for *T. trichiura*: 40.2%. This study found a significant correlation between intensity of infection and malnutrition level.

Implementation

- Deworming has taken place on a routine basis since 2007 and is carried out every 6 months for children ages 1 to 4 years; 80% coverage was achieved in less than two years of activities integrated with the immunization program.
- School-based deworming of children ages 5 to 14 years takes place in May and November, with 98% coverage.
- Deworming of children who are not in school is carried out through mobile clinic programs, with 30% coverage.
- All districts are providing anthelmintics integrated into the maternal and child health services package and school health programs
- The service began in 2007 in the Toledo and Stann Creek districts and was later scaled up to other districts.

¹⁰ Dr. Francis Morey, Coordinator of the National Tuberculosis Program, Epidemiology Unit, Ministry of Health.

Support and financing

- Albendazole, 400 mg, is used in chewable tablets and suspensions that are well accepted by the child population.
- Vitamins are also administered to children under five. Antiparasitic tablets have been supplemented with vitamin A since 2007.
- The government of Belize purchases vitamin A supplements for children ages 5 to 14 years.
- The main partners are: the Ministries of Health and Education, the private sector, and NGOs.
- As a public resource, the program is offered to the private sector and to NGO service providers and is included in the national health insurance services package.

Lessons learned

- In principle, the annual per child cost is low, an estimated 0.07 Belizean dollars.
- Financing is provided by the government as part of its public welfare program.
- It is easily integrated into other existing services, particularly programs run by the private sector, public institutions, NGOs, and mobile clinics that serve those areas on a weekly and monthly basis.
- High coverage levels are achieved when it is integrated with the vaccination program.
- Chewable tablets are very well accepted by the children

Main challenges

- More than 14% of the population lives in poverty in Belize, which means that poverty has been on the rise in recent years.
- Regular mobile clinics reach remote areas of the country; the main difficulties are access roads, the climate, and the long trips to reach those areas.

Next Steps

- The parasitological survey should be conducted in Toledo in 2013, with funding from the Japan Social Development Fund (JSDF)—preventing malnutrition in children under five.
- The national survey that is scheduled for 2014, excluding the District of Toledo.
- Continue integrating the distribution of medications for other populations (pregnant women) (Neonatal IMCI), through government donations and funding from other partners.
- Continue managing this as a public resource through governmental purchases from the IDA Foundation, which are affordable.
- Improve data collection; this system has been undergoing improvements for eight years.
- Finalize the report from the 2011 nutrition study (biomarkers).

Participant questions and comments

Q/ How can we access donations for preschoolers and how can we access appropriate presentations for preschool age children, such as chewable tablets or suspensions?

A/(A. Montresor) At this point, the donations are for school-age children. However, we hope to be able to cover children under five. There have been discussions with the companies concerning the large number of preschool age children in some countries that also require deworming interventions, to see whether the donations can be extended to them as well. Perhaps in a couple of years we will be able to do it. As far as presentation, in our experience, the liquid formula is difficult to preserve. Perhaps we will find an appropriate presentation for preschool children, like chewable tablets or by crushing the tablets currently in use, in the proper dosage.

A/(D. Addiss) The initial donation targeted school-age children due to the high burden of disease in this age group and for other epidemiological reasons. Coverage has been higher among preschool children than school-age children, due to the integration of vitamin supplementation programs into immunization programs. If there is a need to extend the donation to other groups, it is not going to happen unless a well-documented request is made. Moreover, albendazole is already being supplied for preschool children and pregnant women, and therefore Glaxo-Smith-Kline has a great deal of experience with donations for every age group. Johnson & Johnson has less experience, but is working on a chewable form of the medication for the near future.

Q/ How to ensure the sustainability of the activities? Overreliance on donations would be a risk for the sustainability of the programs. The Expanded Program on Immunization should be taken as an example, since it made sure years ago that the countries included vaccination procurement in their budgets. Also, how to make an intersectoral approach work? How to make the transition from individual efforts to institutionalizing intersectoral efforts? Finally, a concern about the variability of prevalence data. Is the methodology for measuring prevalence standardized?

A/It is hoped that countries will not use their money exclusively for purchasing medications, since control of soil-transmitted helminth infections is not contingent exclusively on medications. The situation is different for EPI, where countries are expected to procure vaccinations with their own resources to strengthen and ensure the sustainability of this prevention measure. In general, the medication is available through donations, but the response should focus in large part on health determinants.

As for the question on an intersectoral approach, many countries have described their experiences with the education, housing, labor, or public works sectors and with other partners. Often the way to connect with these ministries is simply by means of a direct invitation or through key partners that are known to be working with them, such as NGOs or other agencies. In addition, a number of our countries are implementing their integrated plans of action for neglected infectious diseases, and dialogue with potential and existing stakeholders is very important for implementing national action plans. A meeting could be held with a small group of stakeholders, from whom significant support can be obtained.

In the experience with the WASH sector and deworming, many agreements have been obtained through NGOs that work directly with the ministry of health and the ministry of education, among others. The people involved in WASH are focused on diarrheal diseases and we in the health sector need to make sure they are aware of the sector's impact on neglected diseases.

There is uncertainty with regard to the data, since not all countries are using the same laboratory technique, sampling method, etc. The figures presented are the best data available, but there are gaps in the baseline information. Not all

countries have a baseline and some are not interested in obtaining it. It is necessary to determine whether to focus on deworming and begin working on water and sanitation.

If we want to measure impact in the control of soil-transmitted helminth infections, while the tablet reduces intensity and infection, the impact on the population is achieved by improving basic sanitation and other concurrent control activities. The tablet alone is insufficient.

C/In Guatemala, zinc sulphate tablets are being used as supplements in cases of diarrhea and pneumonia. In addition to having a pleasant flavor, it is also possible to measure product quality. It would be useful to consider this type of presentation for programs to control soil-transmitted helminth infections in preschool children. It costs less than the liquid and is much easier to store and transport.

C/We are working with preschool children in Brazil and have had problems with the presentation of the medication for children under 4. Fortunately we have the support of Pastoral del Niño (Childhood Ministry), which monitor weight and identify cases of childhood malnutrition. In Brazil it is not feasible for us to join forces with the Immunization Program, which means that our best partners are these other programs, such as the nutrition program. The donated chewable tablets have shown very good results: they are well accepted by the children, as well as by the professors and the community agents who support the activities.

Q/ Are we prepared to measure prevalence and intensity of infection in the Region? Are we standardized?

A/Administration of the antiparasitic alone helps us reduce prevalence. If we supplement this with activities in the areas of sanitation, drinking water, and hygiene education, we maximize this reduction. WHO recommends that, in order to have an idea of prevalence and intensity of infection in a country, ecological zones should be identified and a random sample of 250 to 500 children taken in each one (50 children per school in 5 to 10 schools), drawn from students in their last year of basic primary education. This gives an idea of prevalence in the general population. WHO also recommends the Kato-Katz diagnostic technique, which makes it possible to read slides in the field; this requires standardization of diagnostic methods.

The Kato-Katz technique allows us to quantify the number of eggs per gram of stool. This method can be used to determine high, moderate, and low intensity of infection.

C/The intersectoral approach is a challenge for everyone. Therefore, besides mapping stakeholders and their roles, it is also important to take advantage of other forums or opportunities in the countries, such as water and sanitation boards, intersectoral roundtables, and so forth. Advocacy is also critical for intersectoral work. The operational activities require a great deal of advocacy in the different sectors. It is also necessary to work on systematizing good practices and lessons learned. This would support the needs of different countries in this regard. Epidemiological surveillance should also be linked with the activities of other sectors, especially water and sanitation.

Q/Mebendazole is used in Bolivia and we'd be interested in other experiences with this medication.

A/ Mebendazole and albendazole are similar products and whether to choose one over the other is really up to each country. Many countries in Latin America use albendazole, while mebendazole is used more in Asia. Albendazole is most active against uncinariasis, while mebendazole is most active against Trichuris trichiura. But both drugs are useful and there are no major differences between them.

In Honduras, mebendazole 500 mg is used and there has not been any sort of adverse reaction. In 2011 it was concluded it did not have any flavor. A mint flavored mebendazole has been used recently, but it has a bitter aftertaste, especially when the tablet is crushed for smaller children.

C/An intersectoral approach must be backed strong policies. As for standardization, Columbia has achieved a good level of standardization between the national public health reference laboratory and the departmental laboratories, as well as external quality control. Colombia opted to go beyond soil-transmitted helminth infections and is working on parasitosis in general.

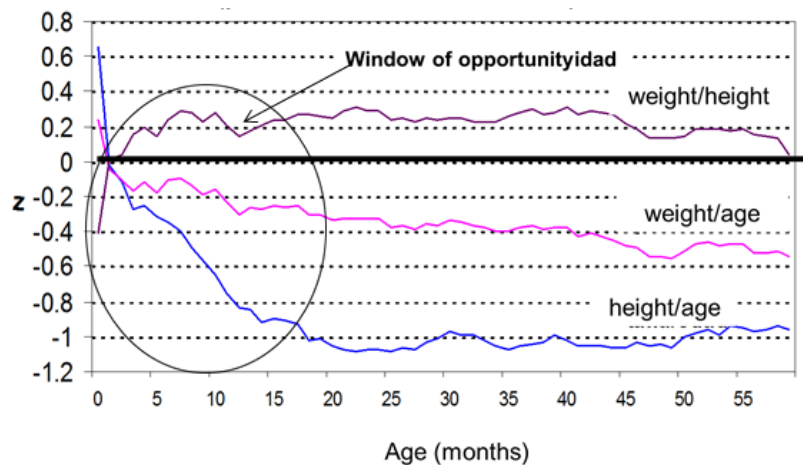
C/In Paraguay, the ministries of health and education signed an agreement for the deworming campaign. We are in the initial stages. A study has already been conducted on WASH and parasitosis and the findings will be available in a couple of months. The study was carried out in 304 public schools in the 1st, 2nd and 3rd levels (ciclos), in order to obtain information on the availability and conditions of access to the water, sanitation and hygiene in the schools.

NUTRITION AND DEWORMING: EXPERIENCE WITH INTEGRATION¹¹

In the first two years of life, there is a window of opportunity to prevent inadequate linear growth in young children. As shown in Figure 5, for a population that is growing normally, the median should be on line zero.

The trend is more or less the same in all the countries, but it is in the first two years when height- and weight-for-age are lost. In the first 24 months they continue to grow like any child in the world, but they already carry a deficit from the first two years, plus the nine months of prenatal intrauterine growth, which also has a lot to do with the young child's nutrition.

Figure 5. Figure 5. Weight/height, weight/age, and height/age, Colombia. 2005 (5 month averages—WHO)



Source: PAHO/WHO

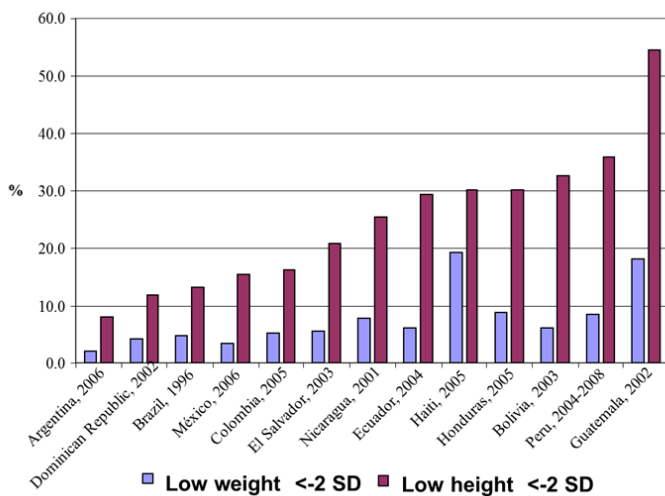
In the Region, there is also the problem of chronic malnutrition and low height-for-age, which is a much bigger problem than low weight-for-age. The goal as far as nutrition is to improve the linear growth of children. A serious problem of chronic malnutrition in the form of low height-for-age is observed in every country except for Haiti (Figure 6).

In general, there have been improvements in almost all countries in the Region, with declines in the problem of low height, but malnutrition continues to be a significant problem.

In Peru, low height prevalence is 8% in some departments, but can be as high as 50% in the highlands.

¹¹ Chessa Lutter, Senior Advisor, Food and Nutrition, WHO.

Figure 6. Prevalence of chronic malnutrition and low weight-for-age, Americas (different time frames)



Source: Lutter and Chaparro. Malnutrition in Latin America and the Caribbean: Reaching MDGs. PAHO, 2008.

Diarrhea was not only a marker of environmental problems. It also indicates that other problems of infection are present. This is compounded by poverty, dietary deficiencies in terms of quantity and quality; anorexia due to micronutrient deficiencies; infections that contribute to anorexia and to poor digestion and absorption of nutrients, which leads to protein-calorie malnutrition. In addition, infections increase nutrient requirements, while reducing immunocompetence.

The study concluded that the diet of the children under age 36 months increased by 200 calories and 22 grams of protein. The height of the supplemented children increased 2.2 cm. Nutritional supplements had a limited effect. There were significant changes, though it was not enough.

In a multicenter study by WHO, the growth rate of the child population in different countries confirmed that growth evens out in any of the scenarios in five years. The growth rate is the same.

Another conclusion is that supplementation had a synergistic effect in nutrition with regard to diarrheal infections. Children who did not receive a supplement and had infectious diarrhea, lost five centimeters, compared to those who had diarrhea but received supplementation. In addition, the supplemented children had diarrhea for fewer days.

Breastfeeding has a direct effect on nutritional quality and the immunological protection that breast milk affords children. Exclusive breastfeeding offers the most protection to the child, who does not consume any liquids other than breast milk, thereby reducing the risk of infection. With complementary feeding, the children do not receive the same quality or quantity as breastfeeding on demand.

Another problem is anemia in children age 6 to 24 months old. This has consequences for the children's cognitive development. Prevalence of anemia is 65% in children ages 6 to 11 months in the Region (PAHO, 2011).

A study was recently published on diarrhea and subclinical infections and the burden of nutritional problems associated with subclinical infections. What occurs with diarrheal or subclinical infections is that they affect absorption by the lining of the intestinal tissue, leading to malnutrition.

A study in Guatemala charted the growth curve of an indigenous child in that country. It showed that, while he gained weight during the first six months, weaning brought the onset of disease and crawling placed him at greater risk of parasitic episodes, which were documented up until his death at 3 years of age.

A longitudinal study conducted 25-30 years ago among poor children in southern Bogota, Colombia studied four groups of children. One group received nutritional supplements; a second group received early stimulation; a third group received both interventions, and the fourth was the control group. Both growth and social development were measured. Harvard University, in collaboration with the Colombian Institute of Family Welfare —ICBF conducted the five-year study.

In conclusion:

- Infections are very common in the first 2 years of life (even if they are asymptomatic). They can be accompanied by appetite suppression, reduced absorption or loss of nutrients, and nutrient diversion.
- Interventions that combine prevention and control of infections and promote a better diet will be most effective in improving growth and development.

Countries like El Salvador have a good program for nutritional supplementation with vitamin A twice a year and deworming. The issue to pursue with this model is through prevalence of vitamin A deficiency, working a lot in El Salvador and the rest of the region, including in El Salvador. The focus must remain on the poorest populations, making sure to reach them with a more integrated model to be able to maintain deworming. The conclusion is that it is necessary to improve nutrition and complement it with the deworming, in each encounter with the child.

KNOWING THE GUIDANCE FOR IMPLEMENTATION OF INTEGRATED DEWORMING ACTIONS

OPERATIONAL GUIDELINES FOR THE IMPLEMENTATION OF INTEGRATED DEWORMING ACTIVITIES¹²

Objectives of the guidelines:

- Help reduce the prevalence and intensity of STH and their sequelae
- Facilitate elements to scale up and optimize deworming activities and promote the integration of this activity into existing health platforms
- Promote the control of STH with concurrent sanitation and education measures
- It does not involve creating another program
- Strategy: achieve at least 75% deworming coverage of the at risk population within five to six years

The guide is directed towards national health, education, housing, and environmental authorities, so that it is a policy of the State, rather than a particular administration, in order to enhance effectiveness and efficiency. The main challenge lies in the intersectoral approach. But health problems are not confined exclusively to the health sector.

Take into account that the program is implemented at the subnational and local levels through initiatives targeting the child population: EPI, IMCI, and growth and development monitoring, food supplementation, healthy schools, community homes, school lunchrooms, and school feeding programs, among others.

In the context of neglected infectious diseases, the problem is part of the so-called unfinished agenda in health, burden of disease, loss of productivity, greater impact on the poor, and the high costs of care. The problem is approached from the standpoint that the control and potential elimination of neglected infectious diseases is viable.

It should be noted that soil-transmitted helminth infections (STH) are the only NIDs present throughout Latin America and the Caribbean. Over 49 million children under the age of 15 years are at risk of contracting these infections in 30 countries of LAC. The population at risk for STH lives in the worst socioeconomic conditions of poverty and in areas with particular ecological characteristics. Moreover, STHs help exacerbate the transmission and severity of malaria, tuberculosis, and AIDS.

Take into account, as a key characteristic for understanding the integrated approach, that the infection can only be contracted through contact with the contaminated environment, in other words it does not multiply in the human body. Just one of these parasites can survive from one to five years in the human body and the more parasites, the more severe the infection and the more infectious-contagious the carrier. School-age children have the highest burden of STH and this is representative of the community. The importance of this is underscored in the discussion of sentinel points in the guidelines. Deworming reduces propagation, thereby reducing the prevalence and in particular, the intensity of infection.

The most significant consequences include the problem of anemia, micronutrient deficiency, and malnutrition; intestinal obstruction, invagination, and rectal prolapse; delays in physical and cognitive development; school absenteeism and dropout; chronic fatigue and intermittent abdominal pain; and low self-esteem and social exclusion, among others. Pregnant women risk anemia and having children with low birth weight.

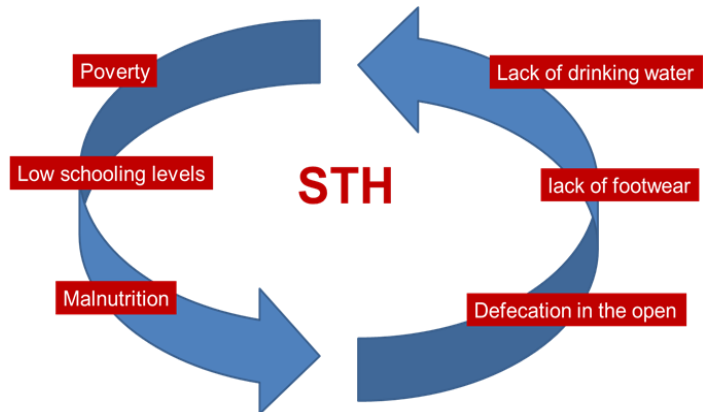
¹² Luis Carlos Ochoa, MD, pediatrician and professor at the Bolivarian Pontifical University in Medellín.

According to estimates, between 4.7 and 39 million healthy years of life are lost due to STH. There is a direct correlation between the number of parasites and loss of intelligence quotient: children lose on average 3.75 points of intelligence quotient per intestinal parasite infection. Soil-transmitted helminth infections have a significant impact on a country's economy. Because of the sequelae they produce in childhood, these parasites have repercussions for job performance, and can cause as much as a 40% loss in productive capacity.

It is important to approach soil-transmitted helminth infections by acting on the different variables that become part of a vicious cycle and this requires a multidisciplinary and intersectoral effort. The solution is not confined to deworming (Figure 7).

There are many ways to effectively integrate the approach at the individual level—PHC visits, growth and development programs, or nutritional consultations—and at the mass level, through mass drug administration, targeted preventive chemotherapy for a specific group, and selective preventive chemotherapy in a geographical area selected based on prevalence. If prevalence is higher than 20%, that community should be prioritized.

Figure 7. Format for addressing soil-transmitted helminth



Source: LC. Ochoa, Pontifical Bolivarian University, 2013

The target population for deworming activities are preschool age (1 to 4 years) and school-age children (5 to 15 years) and at risk adults (women of childbearing age, pregnant women beginning in the second trimester, agricultural and mining workers, among others). Preschool children are a target since they have more risk of acquiring STH (weaning, crawling, oral stage). They are also more susceptible to malnutrition and anemia; up to 20% of the inhabitants of endemic areas are preschool age children. Infection at an early age produces irreversible sequelae in the physical and cognitive development of children under two. In its series on maternal and child malnutrition, the journal *The Lancet* draws attention to the need to address nutritional problems in the first two years of life. After age two, impairment of cognitive intelligence is unrecoverable.

There are two categories of benefits of deworming preschool and school-age children. The first includes benefits for nutrition and growth, and in relation to other diseases, and the second relates to cognitive performance and the social and economic impact. Benefits in the first category are that deworming prevents and reduces anemia and other micronutrient deficits, improves appetite (48%), prevents growth retardation in children (82%), and increases weight among preschool children (35%). It also contributes to the control, and slows down the clinical course, of other diseases (oxyurids, HIV/AIDS, TB, Cholera). In the category of benefits related to cognitive performance and social and economic impact, deworming reduces school absenteeism (25%) and improves motor and language development; it contributes to reducing soil contamination by STH, and helps to improve income in adults (40%).

Integration of deworming into other public health platforms

There are programs with economic resources, infrastructure, logistics, and processes in place, which ensures sustainability over time. It is possible to improve access to and the supply of health services; the costs of the activity are reduced by up to 47%; it boosts confidence in health services and health workers; it strengthens the outcomes of other

activities; it boosts school enrollment among girls by over 40%; deworming can be done by nonmedical personnel, who require only a short, simple training process; and mass treatment of STH in schools “is one of the best buys in global public health.”

Basic characteristics of the deworming activity

- Minimum coverage of 75% of the at risk population
- Monitoring and evaluation indicators (prevalence, intensity, anemia, coverage, impact)
- Cover preschool and schoolchildren
- The activity should be integrated; it is not a vertical, isolated program
- Community participation, which is essential
- Monitoring of adverse effects, which are minimal since only a minimal percentage of the medication is absorbed; for this reason, dosage is not calculated by kg of weight of the child.
- Continuity
- Allocated resources

Deworming can be integrated into other components, programs, and platforms. For preschool children (12 to 59 months), there is the Expanded Program on Immunization (EPI), the vitamin A supplementation program, the IMCI strategy; the growth and development program, the food supplementation program, and kindergartens or early childhood education programs. For school-age children, there is the growth and development program and the school health or healthy schools program.

Operational Framework

Each country should have a committee that includes the following fields: epidemiology, environmental sanitation, medications, health communication, planning, service delivery, and information systems, integrating the education and health sectors.

Recommended steps for the integration of deworming into other components or programs include: 1) epidemiological situation analysis of STH; 2) advocacy to secure political commitment; 3) preparation and implementation of the integrated plan; 4) identification and establishment of partnerships for implementation of the plan; and 5) monitoring and evaluation and operational research to measure impact.

Step 1. Epidemiological situation analysis: this starts with the baseline of prevalence and intensity. It includes determining percentage of coverage, age groups, annual cycles, and program duration. Ideal programs for integration of deworming activities should also be identified.

Step 2. Advocacy to secure political commitment: provide evidence that STH are a public health problem; show that mass drug administration is more efficient than individual treatment in areas with STH prevalence rates of > 20%; address the social determinants of health (water, sanitation...); justify that the best method is integration into existing platforms, strategies, or programs; and resources and social mobilization through internal and external advocacy processes.

Step 3. Preparation and implementation of the plan integrated into public health programs, taking into account: at risk population and selected areas; identification of programs into which the activity will be integrated; procurement of medications and supplies; distribution and storage; personnel and training needs; logistics for antiparasitic delivery in

conjunction with other interventions, depending on the platform selected for integration; distribution method (individual or mass – it is usually delivered both ways); calculation of medicines and supplies; social mobilization plan; determination of costs and funding sources; information system; monitoring; schedule and those responsible.

There are numerous points of contact in the health services that provide opportunities to deworm children during routine or sick visits (Figure 8). These are opportunities to carry out deworming and ensure good coverage and they should not be missed.

Bear in mind that deworming is only one of the program's three pillars, and should be complemented with health education and efforts to act on the social determinants of health.

Step 4. Identification and establishment of partnerships for implementation of the plan: take into account the World Health Organization, the Pan American Health Organization, the World Food Program, UNICEF; NGOs; FBOs, community-based organizations, among others.

Step 5. Monitoring and evaluation, and operational research: determine actual coverage, detect difficulties early; generate reliable information; provide feedback to the team and volunteers so that the teacher or community leader knows that his or her work played a key role in the accomplishments; boost the community's confidence and the families' confidence in the health teams.

Figure 8. Opportunities to deworm children in the health services



If a child seen in any of the services requires deworming, he/she should be referred to a program or service that administers the drug on site.

Source: Operational guideline for the implementation of integrated activities integrated deworming activities

There are many indicators, but they are grouped as follows: process indicators (resources, financing, logistics, policy, guidelines, training, others); performance indicators (coverage); impact indicators (prevalence and intensity; morbidity; mortality; incidence; others). Morbidity is harder to measure in terms of impact, since it entails measuring hemoglobin, increased growth, BMI, school performance, cognitive intelligence, etc.

Take into account that process and performance indicators should be monitored from the outset and evaluation should begin with a coverage survey once the program begins. The survey should be done as soon as the deworming activity is completed in a given geographical location.

In light of the literature included in the guidelines, as well as the experiences described in the previous chapter, there is no doubt whatsoever that, if we do our work well, this week-long meeting can become a public health milestone in improving the health of the girls and boys in our Region. The communications component also needs to be strengthened. If we show the mom or childcare providers that when we feed the children we are also feeding other parasites, she will adhere to the program immediately. It is a moral imperative to do whatever is necessary to achieve this.

ACCESS TO DRUG DONATIONS FOR STH DEWORMING¹³

One of the main objectives is to have a single, standardized mechanism for requesting medicine donations in order to coordinate progress against several diseases, as opposed to having a separate form for each one.

Previously, there was a specific medicines request form for each disease. This did little to facilitate coordination between different programs under the ministry of health, or between the latter and other ministries. The idea is to create partnerships between countries, through their technical experts, in order to have a single medicines request form and a single format for reporting coverage of diseases with the medications distributed. The recommendation is to prepare an annual work plan that sets out when and where medicines will be distributed.

Figure 9. Sample joint reporting form

World Health Organization

Joint Reporting Form v.2

The control of neglected tropical diseases represents a major challenge to those providing healthcare services in the endemic countries. Collection, dissemination, and use of reliable preventive chemotherapy data is critical in improving disease control programme efficiency. Additionally, data integration is an important requisite for improving organizational and operational effectiveness.

The purpose of this template Joint Reporting Form (JRF) - available as an Excel file - is to provide national health authorities and data managers with a standardized tool to address these reporting challenges, facilitate integration and thereby further contribute to improving overall programme management. This template aims to standardize national reporting of programme implementation outcomes, improve availability and coordination of preventive chemotherapy data across the World Health Organization regions.

National authorities are requested to complete this form for submission to the World Health Organization by 31 March of year.

Structure of the Application (worksheets):

INTRO	This worksheet includes guides how to fill Joint Application for selected PC medicine and information about status of PC for endemic diseases in the country
COUNTRY_INFO	This worksheet includes information about administrative structure of the country, population by age group, status of endemicity for each disease, population requiring PC, planned interventions and interventions implemented
MDA1, MDA2, MDA3, T1, T2 and T3	These worksheets include information about endemic districts targeted for treatment with specified PC medicine, treatment plan, and number of people received treatment by age group
SUMMARY	This worksheet includes summary of people treated by disease and by PC intervention. Before generating the report (run macros) please select the disease for which you need the report. Follow the same rule to generate various reports. This worksheet should be printed and submitted as a Joint Report (see the instruction for submission in the SUMMARY worksheet).

Instruction for data entry

Most of the cells in the above-mentioned worksheets include formula and calculate automatically, according to the treatment policy for each disease recommended by WHO. See the link http://www.who.int/neglected_diseases/preventive_chemotherapy/pct_manual/en/index.html

Please enter your data into the cells according to their colour code:

- White - cell is not protected. Please enter the value of the requested indicator.
- Yellow - cell includes name of indicator and protected. **No data entry required.**
- Orange - cell is not protected and includes a drop-down menu. Please select the value from the drop-down list.
- Green - cell includes formula but not protected. Please change the value **only if** your data is different from what is calculated automatically.
- Blue - cell includes formula and protected. **No data entry required.**

Country data

COUNTRY	
Year of reporting data	
Is country endemic for lymphatic filariasis (LF) ?	Endemic
Is country endemic for onchocerciasis (ONCHO) ?	Endemic
Is country endemic for soil-transmitted helminthiasis (STH) ?	Endemic
Is country endemic for schistosomiasis (SCH) ?	Endemic

If demographical data at second administrative level are not available by age group, please enter the proportion of population by age group in the country. If data are available, please leave these cells blank.

Pre-school age children (PreSAC) - 1-4 years of age	8.00%
School age children (SAC) - 5-14 years of age	25.00%
Adults - 15 years of age and above	65.00%

Source: WHO 2013

The expectation is that the Regional Office can tailor the form to the Region, including the Spanish translation if possible.

The form is sent by e-mail and uploaded into a country file that can be accessed through a Web-based platform by those responsible for processing the request.

Figure 9 is a sample joint reporting form for country programs. Figure 10 shows part of the sample template for the annual work plan. If information is missing from the form or is not clear, clarification is requested through the Regional Office, to make sure it meets the criteria. If the request meets the requirements, it is sent to a partner for external review and an opinion. If the opinion is favorable, the medicines request is granted for the preventive chemotherapy interventions the country has requested.

The external review is performed to ensure the fairness of the donation process and to make sure that the specific characteristics of the region for which the donation is requested are taken into account.

This system will be launched in 2013 and continue until 2014. The regional bureaus will be given the link to the forms and templates, along with the instructions, which are very simple. In a couple of years, the use of this system will be mandatory. Several countries are already using it.

¹³ Antonio Montresor, Department of Neglected Tropical Disease Control, WHO, Geneva

Figure 10. Sample template for an annual work plan

ANNUAL WORK PLAN 2013-2014

1. Name of country Mukoania
 2. Implementation year May 2013 - Apr 2014
 3. Relevant PC diseases LF STH SCH ONCHO
 4. Specific goals to be achieved in the year
 i) To achieve 75% national coverage for STH and SCH
 ii) To implement national TAS training and implement TAS in 2 Evaluation Units

Activity & sub-activity	Timeline for implementation												Cost	Funding	Gap	Partner
	May 13	Jun 13	Jul 13	Aug 13	Sep 13	Oct 13	Nov 13	Dec 13	Jan 14	Feb 14	Mar 14	Apr				
Annual planning and review													5,300	3,180	2,120	Government funding
Annual planning meeting													5,300	3,180	2,120	Government funding
National stakeholders meeting													5,300	3,180	2,120	Government funding
Training													7,000	0	7,000	
Training of drug distributors													7,000	0	7,000	
National TAS training													7,000	0	7,000	
Social mobilization													7,000	0	7,000	
Drug logistics													54,484	0	54,484	
Drug request													54,484	0	54,484	
Drug repackaging													1,767	0	1,767	
Drug transportation to districts													7,428	0	7,428	
Drug distribution													54,484	0	54,484	
MDA1 (VM + ALB)													54,484	0	54,484	
MDA2 (DEC + ALB)													54,484	0	54,484	
MDA3 (VM)													54,484	0	54,484	
T1 (ALB/MBD + PZQ)													54,484	0	54,484	
T2 (PZQ)													54,484	0	54,484	
T3 (ALB/MBD)													54,484	0	54,484	
Monitoring and evaluation													14,700	14,700	0	Funder 1, Funder 2
LF sentinel/spot check sites survey													13,500	13,500	0	Funder 1
SCH and/or STH prevalence survey													1,200	1,200	0	Funder 2
ONC epidemiological survey																
LF TAS													13,500	13,500	0	Funder 1
Evaluation Unit 1													600	600	0	Funder 2
Evaluation Unit 2													600	600	0	Funder 2

6. Attachment Joint Request for Selected PC Medicines Joint Reporting Form

Source: WHO 2013

A virtual training package, which is very simple, will be included in English, French, and Spanish.

Training sessions will be included in any of the meetings planned for the countries' program directors. Technical support will also be provided to the country either by email or conference call.

The Regional Offices are also willing to assist in processing the forms.

National workshops have been scheduled to bring together country program managers and provide information on this subject.

A form for collecting epidemiological data on morbidity/disability, among others, is being developed and will be disseminated, but it will not have to be filled out every year. When countries wish to share information with WHO, there is a special way of doing that. WHO guarantees the confidentiality of the information reported.

The vision is to make sure that all the countries are capable of filling out the medicines donation form and that they receive donations in a timely manner, distribute the donations as planned, and report on the activities carried out in a particular time period. This information is required in order to report to the General Assembly on progress in the coverage of these types of interventions.

In collaboration with the PAHO/WHO Regional Office and Country Offices, the countries can receive assistance in requesting medicines and ensuring their proper distribution. Country support is planned through visits and other communications media.

Participant questions and comments

Q/ Do medicine requests through PAHO have to be made through the Ministry of Health or can municipalities, an NGO, or a private organization makes such a request directly?

A/The donation must go through the Ministry of Health, which must be accountable for the medicine from the moment it is requested through distribution.

Q/ Mexico already has the form and albendazole is used for at least two of the three national health weeks. Is the order submitted for both national health weeks or are separate requests submitted for each one?

A/Normally the records from the previous year are requested and that is why the annual plan is needed, because that way a single request can be submitted. However, if the country prefers to submit two separate requests, perhaps because of storage issues, that is not a problem. But a single request is recommended since delivery to the country represents a significant cost for WHO.

Q/ What characteristics make a country eligible to request medicine donations from WHO?

A/There is no requirement for granting the donation. Any country that has a problem with soil-transmitted helminth infections and requires the medicine can request and receive it. It is important that the country have a good management system and a good track record of efficient distribution, if they have made previous requests.

Q/ What is the proper process for requesting a donation for the first time?

A/The first step is to have a plan and an accurate estimate of the amount of medicine that is needed.

Q/ What is the average time lapse between the request and arrival of the medicine?

A/It can take a couple of weeks from the time the request is made to receive a response. The response is favorable in 99% of the cases. The shipment can take four to six months. That is why it is important to plan ahead. In an emergency situation, an expedited shipment of 100,000 tablets can be delivered, but if the request is for 10 million, it is difficult to respond that quickly.

Ideally, the country's laws and regulations governing medicines are reviewed before the order is placed, as there may be additional requirements.

In light of past experience, however, there are no major difficulties in this regard as far as albendazole and mebendazole are concerned. The important thing is to make sure that there are no major import costs and that import is duty free. The medicines arrive with all of the relevant import documentation.

One of the main problems identified in the countries has to do with customs clearance. When WHO sends its acceptance, the country responds right away so they medicine can be shipped. When it reaches port, however, the national authorities have difficulties with the nationalization process and oftentimes the cost of storing the medicines at customs can exceed the tax exemption.

There was the case of one country that has been receiving donated medicines for neglected diseases and anticipated that a situation could arise that might hamper or delay getting the medicines out of the customs warehouse, which would increase costs. In that case, the Ministry of Health and Customs negotiated that if the goods were removed within a maximum of 48 hours, there would be no charge for storage.

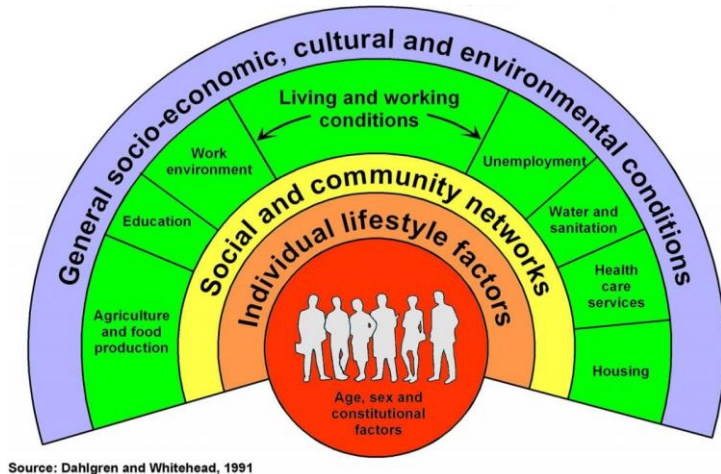
SOCIAL DETERMINANTS OF HEALTH AND ITS RELATION TO CONTROL OF SOIL-TRANSMITTED HELMINTHS¹⁴

Most health problems are associated with people's living and working conditions and particularly with inequities between different social groups, and distributed at different levels (Figure 11).

The first level is related to individual characteristics; the second, behavior and lifestyles; the third, social and community networks that influence individual behavior; and the fourth, external factors associated with people's living and working conditions, which includes access to services.

The hygiene component should be included in the discussion of water and sanitation. Technical interventions or options that fail to include hygiene and health promotion are no longer comprehensive and can lead to loss of effort and resources.

Figure 11. Health Determinants



Approaching health determinants from another vantage point, we can emphasize the interaction between health and the environment in the framework of the population's access to services. Figure 12 shows the block of structural determinants, but the environmental component is fraught with vulnerabilities that arise when these environmental conditions are altered, due to climate change for example, or when there are barriers to access to natural resources—or these resources are poorly administered or contaminated—with the attendant influence on health systems. These circumstances will have repercussions for morbidity and mortality. It is necessary, therefore, to ensure access to health services, which will also be affected in some way by intermediate determinants such as poverty, environmental hazards and threats, and lifestyles and behavior.

In this analysis, there will always be a relationship between health and the environment. Acting on water and sanitation in the environmental context will always have an impact on quality of life and, consequently, on health. Hence the importance of integrated interventions.

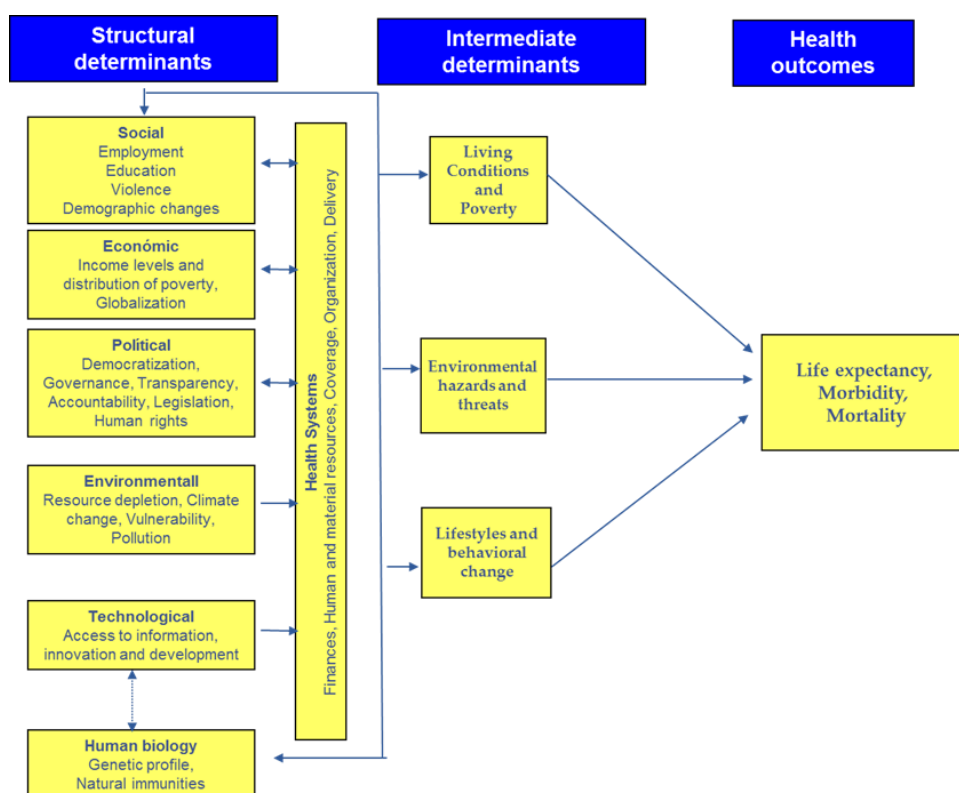
In this approach to determinants, we can see how health is affected by what are known as proximal causes such as environmental pollution, inadequate water and sanitation, chemical contaminants, and the presence of vectors, among others. These conditions are linked, in turn, to what is termed “the causes of the causes,” which unleash a chain of consequences. For example, the presence of vectors has influences the appearance of certain diseases.

The interventions recommended for addressing social determinants related to the water, sanitation and hygiene component in order to have an impact on neglected infectious diseases include:

¹⁴ Henry Hernández, *Regional Advisor, Environmental Health in Emergencies and Disasters*

- Tackle factors related to water, sanitation, and hygiene, and housing conditions.
- Reduce environmental risk factors, focusing on environmental surveillance and impact assessments for planning integrated interventions.
- Improve the health of migrant populations, related to health services.
- Reduce inequities caused by sociocultural and gender-related factors.
- Reduce poverty in endemic populations for neglected infectious diseases; in other words, work on public policy for vulnerable populations.
- Implement surveillance and risk assessment systems and conduct environmental and health surveillance.

Figure 12. Health and its determinants: interactions between health and the environment



Source: E. Loyola/J. Canela/G. Fernández/C. Castillo-Salgado, 2006

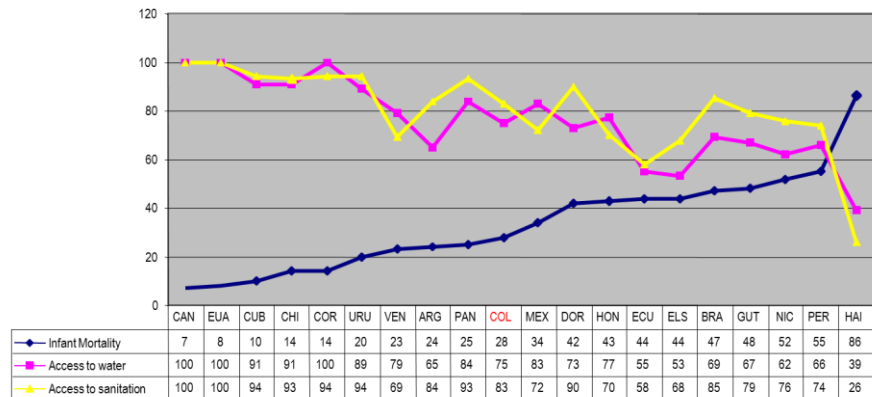
An intersectoral and interprogram approach must include an advocacy and awareness component. These are challenges with a cost attached, since it is important to be very explicit and clear. One of these seven major actions relates to environmental and social services: safe water, sanitation, hygiene, and their appropriate cultural acceptance.

Of the amount of water available on the planet—estimated at 1,424,192,640 km³, we only have access to 0.4% and this small quantity is at risk of contamination. Moreover, it is distributed inequitably, just as there are inequities in access to wastewater disposal services, a key factor for the prevention and control of some neglected diseases.

In the Latin American and Caribbean region, 20% of the population lacks access to sanitation. For this reason, the health and water and sanitation sectors need to sit down together and coordinate integrated actions to improve and ensure the well-being of communities. Only 10% of the wastewater produced in the region is treated prior to final disposal. The rest reaches and pollutes water sources, creating foci of infection that hamper control of neglected infectious diseases.

Figure 13 shows a significant correlation between infant mortality and coverage of water and sanitation services. Countries with high service coverage levels, like Canada, Cuba, and the United States, have low infant mortality rates, while the opposite is true in countries such as Haiti and Peru, where service coverage is low and infant mortality rates are high. This reinforces the need to work not just on access, but on access with a public health approach.

Figure 13. Infant mortality (per 1,000 live births) vs. access to sanitation and water (% of population)



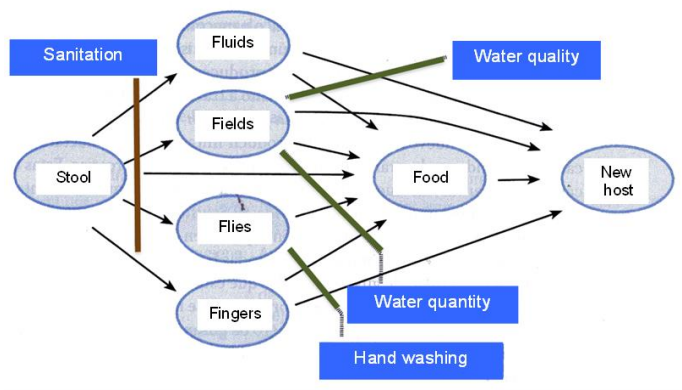
Source: PAHO/WHO, Health in the Americas Regional Report. Evaluation 2000.

A study from Colombia on the burden of disease according to environmental conditions found that the risk factor of *water, sanitation and hygiene* (just for diarrhea) was directly correlated to 2,300 deaths annually, which illustrates the need to address this issue.

It is important to clearly identify the barriers and preventive strategies to interrupt fecal-oral transmission of many infectious diseases by implementing interventions in four categories: sanitation, water quality, access to sufficient water, and hand washing (Figure 14).

One of the most important aspects, about which there must be sufficient clarity, has to do with identifying the most appropriate interventions in sanitation. While conventional technologies can produce appropriate coverage, we must know how to determine whether those same technologies are applicable in disadvantaged urban or rural populations and whether they will actually interrupt the transmission chain. The extent to which water quality standards may be rigorous or flexible in implementing a regulation. The same is true of water quantity and hygiene promotion.

Figure 14. Preventive strategies to interrupt fecal-oral transmission of infectious diseases



Source: PAHO, 2012

Each of these interventions has a relative percentage of impact on the public health problem they seek to address. There must be clarity as far as which of the interventions are most appropriate for a community.

To this end, the proposal is to intervene with integrated strategies like Healthy Spaces, ensuring that they are comprehensive enough for different environments: the home, schools, public spaces, universities, the workplace. This may be the only way to have an impact.

“Water and sanitation is one of the primary drivers of public health. I often refer to it as “Health 101,” which means that once we can secure access to clean water and to adequate sanitation facilities for all people, irrespective of the difference in their living conditions, a huge battle against all kinds of diseases will be won.” (Dr. LEE Jong-wook, former Director-General, WHO. 1945-2006).

INTEGRATED ACTIONS WITH THE WATER, SANITATION, AND HYGIENE SECTOR¹⁵

Two steps were taken in response to this need: 1) a literature review was carried out to find out what the data show in relation to actions on water, sanitation, and hygiene education (WASH) and their outcomes for soil-transmitted helminth infections; and 2) opportunities were identified for collaboration between those of us working on the control of soil-transmitted helminth infections and the WASH sector.

A systematic review was conducted of the literature on interventions in water, sanitation, and hygiene education in relation to outcomes for soil-transmitted helminth infections (STH) in general, and *Ascaris lumbricoides*, *Trichuris trichiura*, and *Ancylostoma* in particular. After reviewing thousands of publications in different languages, a selection was made of the ones that found a statistical correlation between a specific intervention and a specific outcome for STH. Only 55 of those articles were eligible due to their association. Just one of the 55 eligible studies was designed specifically to measure interventions, while the rest were observational studies.

The preliminary results are interesting (Chart 3):

- An analysis of the *water* variable found that access to treated water reduces the probability of infection with any type of STH by 50%
- Although the analysis found no significant correlation between piped water from the water supply system and any type of STH, the probability of infection by *Ascaris Lumbricoides* or *Trichuris trichiura* was reduced by 45%, similar to the results for treated water.
- An analysis of the *sanitation* variable, in its different conceptual approaches, found a strong association between improved sanitation and a 35% to 40% reduction in the risk of any STH. A specific study on *Trichuris trichiura* or *Ascaris Lumbricoides* found a 40% risk reduction.

Chart 3. Systematic literature review on WASH and STH—2012

WASH Variable	Exposure	STH	Odds Ratio (95% CI)
Water	Treated water	Any STH	0.45 (0.46-0.78)
	Piped water	Any STH	1.48 (0.55-3.95)
		Ascaris or Trichuris	0.45 (0.40-0.56)
Sanitation	Improved sanitation	Any STH	0.65 (0.56-0.74)
		Trichuris	0.60 (0.46-0.78)
		Ascaris	0.62 (0.44-0.88)
Hygiene	Wearing shoes	Hookworm	0.29 (0.18-0.47)
	Soap use or availability	Any STH	0.66 (0.39-1.10)
	Washing after defecation	Any STH	0.79 (0.41-1.50)

Source: *Children Without Worms and International Trachoma Initiatives*

¹⁵ David Addiss, Director of the NGO Children Without Worms.

- Most of the studies found that without improved sanitation, the risk of soil-transmitted helminth infection will be greater than one (1). While many studies have a very wide confidence interval, in general they found a direct correlation between lack of sanitation and the risk of STH infections.
- With regard to the *hygiene education* variable, the use of footwear was found to protect against *uncinarias* in approximately 70% of the cases.
- A controversial finding was the lack of a significant correlation between hand washing with soap after defecation and any STH. Perhaps the explanation for this has to do with the physiopathology of these types of infections.

If we compare the roles of the neglected tropical diseases (NTD) component, which is based on mass drug administration, and the WASH sector—keeping in mind that the sector we refer to as WASH is very heterogeneous and is not universally understood as *water, sanitation and hygiene education*—it is evident that the goal of NTD is health or to improve education, while the goal of the WASH sector relates more to human rights, gender equity, and development, with a proportionately low priority on health. NTD is coordinated at the national level, while WASH is coordinated at the district or community level. Community involvement in NTD is periodic (e.g. annual), while it is more consistent in WASH. WASH has higher costs. NTD resources are invested in rural areas and WASH resources in urban areas. While other sectors are required to reach targets that impact NTDs, this is not necessarily the case in WASH.

In December 2012, a roundtable was held at the Bill and Melinda Gates Foundation to improve coordination between people working in the NTD component and in the WASH sector. A common vision emerged of creating a platform for collaboration between the two components, in order to have: "Disease-free communities that have adequate and equitable access to water and sanitation, and that practice good hygiene." Common interests were identified in four areas: advocacy; capacity-building; mapping, data, and monitoring; and research. The roundtable came up with the following suggestions for collaboration in each of the four areas of common interest between the NTD component and the WASH sector:

- Advocacy: unify and articulate consistent messages for funders and the public.
- Training: provide cross training for technical personnel.
- Mapping, data, and monitoring: Create a coordinated map; share the indicators used and databases.
- Research: Identify research priorities for STH and WASH. Study the costs, benefits, and effectiveness of combined interventions.

In an analogy with physics, parallel efforts between the WASH sector and the NTD component of the health sector will broaden the scope of our actions, but if we involve the ministries of health, education, natural resources, and water, as well as NGOs and other multilateral organizations, the NTD control program could have an enormous impact on our goals.

Participant' questions and comments

Q/Models similar to the one proposed in this group of presentations were in use in the 1980s. Health workers had to provide instruction on hygiene education and appropriate technologies for water and sanitation. The presentations point to the need to resuscitate this working model, which has been successful in the past.

A/Interestingly, the discussion today revolves around technological options that used to be called appropriate technologies, and just how appropriate were they for the communities. Currently the Regional Technical Team not a task force on Water and Sanitation—ETRAS (formerly CEPIS) is responsible for water and sanitation issues and is available to share information on technologies and community-based experiences. Sanitation must be an option that

involves community participation. In Bolivia's experience with "Community-based sanitation," from the moment sanitation problems are detected, the community's opinions and proposed alternatives are taken into account. The debate over the best technological options for water and sanitation in the community has to do with being able to contextualize for these options. In this way, rather than imposing what we think the solution is, we can actually arrive with several proposed alternatives and the solution can and should emerge out of community consensus, guided by experts. This should ensure the sustainability and impact of the actions.

C/The discussion of health education in the Guidelines is very general. The WASH sector should play a key role in understanding how to focus these health education activities.

C/The Regional Technical Team on Water and Sanitation (ETRAS), based in the Representative Office of PAHO in Peru, has taken what was good and excellent from what used to be the Pan American Center for Sanitary Engineering and Environmental Sciences (CEPIS) and approaches sanitation problems from a different perspective. For example, how is it possible to have an influence in areas highly vulnerable to STH. We are going to carry out an initiative—which is being developed with the University of Montreal—in the Tumbes area on the border between Ecuador and Peru. It uses the Ecosalud (Ecohealth) approach to obtain this type of evidence in the field, with the participation of the authorities, the community, the agriculture, tourism, and fisheries sectors, and private organizations involved in sanitation. It will also measure the impact of the activities.

C/Health determinants are one of the most critical, complicated and far-reaching issues related to soil-transmitted helminth infections. In addressing health determinants, we have to situate ourselves in the realm of economic approaches, government policy, anthropological factors, and distractors such as drug trafficking, violence, and justice. All this leads to the heart of the matter where these problems can be addressed, namely productivity. If there is no productivity in our countries and we focus only on the cosmetic issues in our communities rather than on productivity, we will always get stuck halfway there. With better living and health conditions as a result of efforts to improve productivity, we will have a greater impact on public health.

In sum: A panorama or vision of the social determinants of health has been presented, and how they can help or hinder our efforts to control soil-transmitted helminth infections. Several of the actions that can be taken from the technical standpoint also require a degree of advocacy on poverty reduction. There was discussion of the opportunity to think about healthy spaces, as a frame of reference for contributing to the control of helminth infections. Scientific data from a meta-analysis that cross-matched WASH interventions and the probability of impacting STH pointed to the importance of drinking water, hand washing and the need to bridge the gaps between control programs for soil-transmitted helminth infection and the WASH sector. This means it is necessary to build bridges between these two efforts with a common approach and vision. We have seen how joint efforts can broaden the scope of the outcomes. Finally, it is necessary to examine experiences from the 1980s and the lessons learned from interventions to control diarrheal disease in that period, and perhaps revisit some of those strategies in our efforts to control soil-transmitted helminth infections.

OPPORTUNITIES AND CHALLENGES ON THE INTEGRATION OF DEWORMING WITHIN OTHER PUBLIC HEALTH PLATFORMS

Group work to identify successful experiences, lessons learned, and challenges in integrating deworming activities into existing public health platforms with a track record of accomplishments over several years, as well as the advantages and disadvantages of this type of integration.

Chart 4. Summary of the workshop on opportunities and challenges for the integration of deworming into health platforms—Part 1

GROUP	SUCCESSFUL EXPERIENCES	LESSONS LEARNED	CHALLENGES
Peru Bolivia	- There are no previous experiences with deworming	- NGOs and other private entities have played a leading role. The Ministry of Health should take on this leadership role	- Policymakers recognizing the importance of deworming - Implement the baseline - Improve coordination with local and regional authorities - Draft a plan for intersectoral intervention - Compile information for the donation request - Design and implement a pilot
Colombia	- Deworming through the Health System Collective Interventions Plan (COL) in the school-age population. Impact has not been measured. - Agreements between the Ministry of Health with IOM, WFP, PAHO, University of Antioquia, among others.	- Need to integrate the STH subprogram into the NID program - Information system for efficient management - Coordination with stakeholders carrying out deworming activities - Promote and support local adaptations of the National Plan	- Consolidate the Program and integrate it into the PHC framework - Conduct a baseline survey in the remaining regions - Commence deworming activities coordinated with interventions to act on determinants - Monitoring at sentinel schools - Mobilize other sectors
Honduras Guatemala	- Integration of EPI programs, Programa Niñez (Childhood Program) with support of CIDA Canada, in San Esteban–Olancho–Honduras. - Operation Blessing in the school-age population in 8 departments (Guatemala)	- Strategic partnerships with other sectors - Coordination, leadership, and steering role of the Ministry of Health - Cost reduction through partnerships. - It is necessary to act on health determinants - Comprehensive, integrated health promotion efforts	- Deworming as national policy - Awareness campaigns for behavioral changes - Strengthen partnerships with other sectors - Improve health conditions in the areas of water, sanitation, and environment - Ensure the sustainability of monitoring and evaluation activities
Nicaragua Brazil Panama	- Partnerships with civil society (Hansen’s disease movement - BRA) - Political will to create synergies between health/education and internal advocacy on health surveillance (NIC) - Health-education intersectoral coordination and partnerships with pharmaceutical companies (PAN)	- Interinstitutional integration that facilitates deworming - Baseline information systems for planning - Request for and timely provision of antiparasitic - Promote community participation	- Monitoring and evaluation of outcomes and impact - Promote sustainability - Maintain political backing - Stakeholder availability (to assign responsibilities) - Improvement of sanitation infrastructure in schools
Paraguay El Salvador	- Coordination between the Ministries of Health/ Education and installation of the deworming program after 8 decades (PAR) - Ongoing deworming program (ELS–In 2012, 365,000 doses) - Support for education from an NGO (ELS) - Discussion sessions in the Health Units	- Planning is necessary and should be comprehensive: supplies, logistics, resources, among others - Join forces with other institutions interested in deworming - Coordinate with programs like EPI to avoid campaign overload (Ministry of Health + Ministry of Education)	- Consolidate the program as a public health priority - Integrate NGOs working in this area - Integrate other programs within the health sector and with others sectors

GROUP	SUCCESSFUL EXPERIENCES	LESSONS LEARNED	CHALLENGES
Suriname Guyana Saint Lucia	<ul style="list-style-type: none"> - Study and treatment completed on the coast. In the interior, the NGO Medical Mission will work on the baseline and distribution of medications (SUR) - Integration of deworming activities in welfare programs (SUR and GUY) - Intersectoral collaboration between the Ministries of Health and Education (GUY) - Use of other intersectoral programs for deworming activities 	<ul style="list-style-type: none"> - Free access to antiparasitics in pharmacies (SUR) - It is essential to improve sanitation (SUR) - School-based health education with emphasis on food washing and footwear use (SUR) - It is important to reduce poverty in the coastal area. Progress has been made in infrastructure (SUR) - Sustain annual deworming + food handling certification - Identification of specifics for the baseline - Identification of what programs require in order to make the necessary changes and adjustments 	<ul style="list-style-type: none"> - Baseline study in the interior, in partnership with the Ministry of Health + NGO Medical Mission (SUR) - Elimination of STH + Schistosomiasis (SUR) - Economic support for the program in the interior of the country (SUR) - Train health human resources in the interior of the country in the Kato Katz diagnostic method and baseline measurement - Improve communication between the government and the community (StL) - Advocacy to ensure that people continue deworming as a priority - Intervene in remote or hard-to-reach populations
Dominican Republic	<ul style="list-style-type: none"> - Strategic partnerships with: WFP (albendazole donation) + Ministry of Education (INABIE—annual purchase and distribution) + Food for the Hungry (donation) - Local partnerships: private companies + Lions Club + deputies + neighborhood councils - Partnerships with national nutrition and school health programs - Linkage with PAHO for technical cooperation and donations 	<ul style="list-style-type: none"> - Optimization and adaption of data collection forms - Intersectoral cooperation on activities for the control of STH. - Integration with associations of fathers, mothers and friends of the schools (APMAES) - Carry out medicines procurement in a timely manner (POA) - Reach key stakeholders in deworming through trainings, with a focus on priority areas 	<ul style="list-style-type: none"> - Monitoring, follow-up on the deworming day, and sustainability - Expand the program to preschool children, pregnant women, adolescents, and young adults - Improve coverage among boys, girls, and adolescents who are not in school - Timely availability of the medication - Achieve coverage among boys, girls, and adolescents with disabilities
Belize Venezuela	<ul style="list-style-type: none"> - The education/health partnership will facilitate stool diagnosis and estimates of prevalence and intensity of infection in the school-age population (BEL) - Partnership between Education, Health, UNICEF, and Bayer Pharmaceuticals in school based activities (VEN) 	<ul style="list-style-type: none"> - The many institutions and cooperation agencies should speak the same language - Information should be unified among all stakeholders (to avoid duplication) - Updating of the student census - Raise awareness about sanitary issues - Importance of community participation - Importance of prevalence in determining future actions 	<ul style="list-style-type: none"> - Post-treatment evaluation - Consolidate the information system - Cover remote areas - Achieve 100% coverage in the non-school population - Consolidate STH as a public health problem - Empower the communities on health determinants and risk factors - Consolidate the intersectoral approach
Mexico	<ul style="list-style-type: none"> - Improved access to water + deworming in Trachoma and STH programs (Chiapas State—MEX) - Mass deworming + zero adverse effects from albendazole + integration into a national health program + NGO donation in 2009 + purchase and distribution under the purview of each State (MEX) 	<ul style="list-style-type: none"> - Mass deworming is better than individual deworming (MEX) - The medicine is safe and effective (MEX) - Interventions in sanitation contribute to the reduction of soil-transmitted helminth infections - Dissemination of materials helps raise public awareness about the problem and encourage program adherence 	<ul style="list-style-type: none"> - Extend deworming to the entire population (MEX) - Evaluate the program's impact (prevalence and intensity—MEX) - Improve sanitation conditions (MEX) - Keep up public awareness activities (MEX)

Chart 5. Summary of the workshop on opportunities and challenges for the integration of deworming into health platforms—Part 2

COUNTRIES	ADVANTAGES	DISADVANTAGES
Colombia El Salvador	<ul style="list-style-type: none"> → Conducive to a unified surveillance system → The communities see more comprehensive benefits and solutions, more acceptance → Resources are used more efficiently → Better geographical coverage → Comprehensive care → Integration of programs strengthens leadership and the information system → Reduces staff resistance to taking on more duties 	<ul style="list-style-type: none"> → Staff resistance to taking on more duties → Only targets soil-transmitted helminths, leaving aside other parasitoses. Risk of confining control solely to soil-transmitted helminth infections → Perceived excessive workload for the program supporting deworming → There can be difficulties in consolidating information → It could weaken the other program or reduce the importance of deworming
Panama Honduras	<ul style="list-style-type: none"> → Better coverage → More staff participation → Stronger intersectoral approach → Conducive to unifying criteria and efforts → Activities are more cost-efficient 	<ul style="list-style-type: none"> → Dilution of authority in their areas of jurisdiction → Overburdens participating staff → Difficulty implementing an information subsystem
Bolivia Dominican Republic	<ul style="list-style-type: none"> → Optimizes resources → Avoids duplicating efforts → Strengthens the activities → The program's structure facilitates distribution of the medicines → Improves access to remote areas 	<ul style="list-style-type: none"> → Need to convince in deworming activities → Procuring resources and training take time → Health workers lack information and capacity on deworming → There may be a lack of empowerment for deworming days in provincial health bureaus
Peru Paraguay	<ul style="list-style-type: none"> → Takes advantage of the operational experience of another program → Efficient use of resources → The other program's credibility lends support to the new intervention → Synergy reinforces results → Facilitates coordination between government sectors and entities 	<ul style="list-style-type: none"> → Overburdening the program that supports deworming → Local authorities do not follow up → Poor health structure can undermine efforts
Saint Lucia Belize	<ul style="list-style-type: none"> → Conducive to coordination and cooperation → Strengthens the capacity and scope of services → Information available in other programs would be useful for control of STH 	<ul style="list-style-type: none"> → There may be competition for resources → The platforms may not achieve the objectives for the population → Needs to rethink political agendas → Compensation for and commitments with other services could be affected → Convince about the advantages of integration for a purpose, not as an additional burden → Professional jealousy over the achievements (taking credit for the accomplishments of others)
Suriname Guyana	<ul style="list-style-type: none"> → Better use of the existing system for health promotion and information → Reduces logistical costs → Reduces the cost of social mobilization and training 	<ul style="list-style-type: none"> → Possible dilution of efforts and maybe waning community interest → Requires more coordination to act on time → Perception of additional work on the part of health workers and trainers
Ecuador Nicaragua	<ul style="list-style-type: none"> → Promotes and facilitates teamwork → Strengthens ability to achieve the targets → Reduces costs → Strengthens the integrated and intersectoral approach, and public participation → Strengthens sustainability 	<ul style="list-style-type: none"> → Health workers resistant due to excess work → Monitoring becomes more complicated
Brazil Venezuela	<ul style="list-style-type: none"> → Intrasectoral strengthening → Savings in human talent, logistics, and resources → Win-win, synergies, coverage, results, and impact. → Reduces ethnic and gender discrimination 	<ul style="list-style-type: none"> → Increases uncertainty with regard to the results and the implementation process (e.g. interpretation of standards, registry of information, different levels of commitment) → More work to organize

COUNTRIES	ADVANTAGES	DISADVANTAGES
Mexico	→ Increases coverage	→ Need to restructure a system that has already been developed and implemented
Guatemala	→ Reduces costs	→ Integration difficult due to the complexity of the ministries
U.S.	→ Conducive to broader dissemination of the issues	→ Requires adapting schedules to fit the existing platform
	→ Intrasectoral strengthening	
	→ Facilitates sharing of experiences	

Summary:

- For the actions that the majorities of the countries are undertaking for mass deworming, or are in the process of implementing, there is consensus that they can implement a program for the control of soil-transmitted helminth infections.
- Partnerships are becoming increasingly important to achieve common objectives. Perhaps soil-transmitted helminth infections will pave the way for integrating other public health programs with similar control processes.
- Countries are beginning to take ownership of the challenges. This awareness contributes to the achievement of the objectives.
- The disadvantages mostly relate to whether the responsibility will be unloaded onto the other program. There should be a common understanding of what is understood by *integration*. It is not about overloading a program. It is important to support the activities with physical and economic resources and human talent, and take advantage of opportunities to reach people with more integrated packages.
- It is necessary to make the advantages of integrated efforts, for example between health and education, more visible. The advantages are clear to see, but the disadvantages would be limited to administrative processes.
- In order to implement a plan for control of soil-transmitted helminth infections in the countries, it is important to include the strategies and their advantages so that the plan is marketable; this would reinforce advocacy efforts with the different sectors.

PRESENTATION OF THE OPERATIONAL PLANS OF ACTION OF THE PARTICIPATING COUNTRIES

The operational plans were drafted by the delegates of the 18 participating countries using the suggested methodology and instruments; the countries were divided into the following working groups:

- Group 1: Belize, Guyana, Saint Lucia, and Suriname.
- Group 2: Brazil, Colombia, Honduras, and Venezuela.
- Group 3: Dominican Republic, Ecuador, Mexico, Panama, and Peru.
- Group 4: Bolivia, El Salvador, Guatemala, Nicaragua, and Paraguay.

Chart 6. Summary of the main points of the deworming plans for STH, by country

Country	When, where and for whom	Main activities that the country wants to implement	Necessary medications	Three next steps
Belize	<p>Plan duration: 5 years</p> <p>Area:* National</p> <p>Target population: PS: 36,586; S: 74,735; ADU: 83,723</p>	Belize is implementing a deworming plan.	<p>How many tablets? 400,000 tablets/suspension per year.</p> <p>How many donated? The HM will purchase them. However, they will study the possibility of requesting donations in 2014.</p>	<p>1. Conduct an impact assessment in southern Belize, May-June 2013.</p> <p>2. Conduct a national survey on STH prevalence, which may include high schools, prevalence in women of childbearing age, and WASH in the schools (secondary data from WASH).</p> <p>3. Analyze the findings and revise the STH action plan.</p>
Suriname	<p>Plan duration: 2.5 years (07/2013-12/2015)</p> <p>Area:* Subnational</p> <p>Target population: PS: 4,830 S: 16,435 ADU: 42,775</p>	<p>1. Annual planning and review.</p> <p>2. Identification of public health platforms, programs, or activities that could support deworming (IMCI, EPI, school health or nutrition programs, etc.)</p> <p>3. Include integration of the WASH strategy in the plan to tackle STH infections.</p> <p>4. Necessary medications and supplies, and the procedures for donation, procurement, storage, distribution, and monitoring of activities.</p> <p>5. Implementation of the campaign</p> <p>6. Monitoring and evaluation</p>	<p>How many tablets? 200,000</p> <p>How many donated? TBD</p>	<p>1. Approval of the draft plan by the National Malaria Board and NIDs.</p> <p>2. Finalize the sub plan</p> <p>3. Begin mobilizing resources</p>

Country	When, where and for whom	Main activities that the country wants to implement	Necessary medications	Three next steps
Guyana	<p>Plan duration: 2014-2018</p> <p>Area:* Subnational Region 4</p> <p>Target population: PS: 9,259 S: 286,980 ADU: 272,000</p>	<ol style="list-style-type: none"> 1. Annual planning and review. 2. Identification of public health platforms, programs, or activities that could support deworming (IMCI, EPI, nutrition programs, etc.) 3. Include integration of the WASH strategy in the plan to tackle STH infections. 4. Necessary medications and supplies, and procedures for donation, procurement, storage, distribution, and monitoring of activities. 5. Implementation of the campaign 6. Monitoring and evaluation 	<p>How many tablets? 310,000</p> <p>How many donated? 310,000</p>	<ol style="list-style-type: none"> 1. Sentinel field studies to determine the baseline in 2013. 2. Organize LF MDA in Region 4 3. Meeting with IMCI, PMTCT.
<p>Saint Lucia</p> <p>** The Program will focus on STH and schools</p>	<p>Plan duration: 3 years (2013-2015)</p> <p>Area:* National</p> <p>Target Population: PS: 11,810 S: 28,068 ADU: 125,716</p>	<ol style="list-style-type: none"> 1. Annual planning and review. 2. Identification of public health platforms, programs, or activities that could support deworming (IMCI, EPI, school health or nutrition programs, etc.) 3. Include integration of the WASH strategy in the plan to tackle STH infections. 4. Necessary medications and supplies, and procedures for donation, procurement, storage, distribution, and monitoring of activities. 5. Implementation of the campaign 6. Monitoring and evaluation 	<p>How many tablets? TBD</p> <p>How many donated? TBD</p> <p>(Interested in donations)</p>	<ol style="list-style-type: none"> 1. Stakeholders meeting to set program priorities 2. Evaluate the viability and need for a prevalence study 3. Training 4. Carry out the survey 5. Evaluate the epidemiological situation. 6. Design and implement deworming strategies
Brazil	<p>Plan duration: 2011-2015</p> <p>Area: 720 priority municipalities 37 for trachoma</p> <p>Target population: 6,970,285 schoolchildren (preschool children in the next phase)</p>	<ol style="list-style-type: none"> 1. Integration of deworming with program for Hansen's disease, trachoma, schistosomiasis, school health, family health strategy 2. Integration of WASH activities 3. Development and implementation of the web-based data collection system for monitoring 4. Monitoring of interventions, evaluation of lessons learned, and preparation of the next campaign 	<p>How many tablets? 9 million tablets per year</p> <p>How many donated? There is an interest in continuing to receive donations. (donation of 9 million received in 2013 through PAHO/WHO)</p>	<ol style="list-style-type: none"> 1. Conduct monitoring of the June 2013 deworming activity 2. Evaluate the first integrated campaign on leprosy, trachoma, and soil-transmitted helminth infections 3. Schedule the 2014 campaign

Country	When, where and for whom	Main activities that the country wants to implement	Necessary medications	Three next steps
Honduras	<p>Plan duration: 2012-2017</p> <p>Area: 18 departments</p> <p>Target population: 867,754 preschool children and 1,235,292 schoolchildren</p>	<ol style="list-style-type: none"> 1. Integration of deworming with EPI, Healthy Schools, World Food Program-WFP, and the leadership of the National Technical Committee on Neglected Diseases 2. Integrate efforts to act on health determinants 3. Move forward in the implementation of educational and health promotion activities 4. Conduct monitoring and supervision at the regional and local levels following each campaign 	<p>How many tablets? 3,672,172 per year</p> <p>How many donated? Interested in accessing donations through PAHO/WHO</p>	<ol style="list-style-type: none"> 1. Disseminate and validate the deworming plan with the National Technical Committee on Neglected Diseases 2. Prepare the next School Deworming Day in coordination with the Secretary of Education, Healthy Schools, and WFP. 3. Present the operational plans for the campaign and partners to cover gaps. 4. Request donation of the medications for 2014
Colombia	<p>Plan duration: 2013-2017</p> <p>Area: Municipalities with prevalence rates >20%</p> <p>Target population: 260,000 preschool children 560,000 schoolchildren 1,700,000 adults</p>	<ol style="list-style-type: none"> 1. Integration of deworming with EPI, IMCI, nutrition, healthy spaces, territorial water plans, and the institutional educational program 2. Implement educational activities on hand washing and hygiene, which are key for prevention 3. Implementation of the pilot project Chocó department to improve water quality and excreta disposal in the schools 4. Surveillance and monitoring, including sentinel surveillance 5. Monitoring and supervision of previous activities and campaign implementation 	<p>How many tablets? 1,320,000 tablets</p> <p>How many donated? Interested in the donation but need to review national regulations</p>	<ol style="list-style-type: none"> 1. Adapt the current plan for control of soil-transmitted helminth infections based on the National Plan for the Prevention, Control, and Elimination of Neglected Infectious Diseases (NIDs). 2. Validation, adaptation, and dissemination of guidelines and protocols tailored to the country: National Plan for NIDs (includes Plan for the control of the soil-transmitted helminth infections), National guidelines for mass anthelmintic deworming, surveillance protocol for soil-transmitted helminth infections. 3. Strengthen capacity in the departments to include control of soil-transmitted helminths in departmental health plans and annual operating plans
Mexico	<p>Plan duration: 2014-2018</p> <p>Area:* national</p> <p>Target population: PS: 9,341,432 S: 29,000,475</p> <p>Total target population: 38,341,907 children ages 2-14 years, two rounds/year</p>	<ol style="list-style-type: none"> 1. Continue deworming activities 2. Monitoring and evaluation 3. Periodic meetings with the heads of participating programs 	<p>How many tablets? 84,352,195 tablets of albendazole for two rounds per year for children ages 2 to 14 years</p> <p>How many donated? For 2014, they will request 63,801,045 million tablets of albendazole for schoolchildren</p>	<ol style="list-style-type: none"> 1. Evaluate the impact of sustained deworming on prevalence and intensity of soil-transmitted helminth infections 2. Request donations of ALB/MEB from PAHO/WHO

Country	When, where and for whom	Main activities that the country wants to implement	Necessary medications	Three next steps
Venezuela	<p>Plan duration: 2013-2017</p> <p>Area: States of Cojedes and Yaracuy</p> <p>Target population: 97,313 preschool children 184,836 schoolchildren</p>	<ol style="list-style-type: none"> 1. Integrate deworming activities with the Barrio Adentro (Inside the Neighborhood) and Traditional programs, and the Food and Nutrition Program 2. Integrate water, sanitation, and hygiene activities with the respective national authorities 3. Conduct the baseline survey on prevalence and intensity of infection 4. Implement the KAP survey on healthy practices related to soil-transmitted helminth infections 5. Monitoring and evaluation following the 2015 and 2017 interventions 6. Systematization and publication of the experience 	<p>How many tablets?</p> <p>In Cojedes: 188,704 tablets (two rounds the first year and then adjusted based on the survey findings)</p> <p>In Yaracuy 187,797 (one round the first year)</p> <p>How many donated?</p> <p>Not sure yet whether a donation will be requested through PAHO/WHO</p>	<ol style="list-style-type: none"> 1. Inter and intrasectoral meeting to complement the action plan for the control of soil-transmitted helminth infections 2. Have medications and supplies available for implementation 3. Ensure implementation of the baseline survey and post-intervention monitoring
Dominican Republic	<p>Plan duration: 2014-2017</p> <p>Area:* National</p> <p>Target population: PS: 749,975; S: 2,076,287; ADU: 975,793</p> <p>Population total goal: 3,802,055 people; two rounds per year</p>	<ol style="list-style-type: none"> 1. Monitoring and evaluation 2. Procurement and distribution of the medications 3. Meeting and coordination with partners and allies 4. Training of key stakeholders 	<p>How many tablets?</p> <p>8,364,520 tablets of ALB to deworm PS, S, ADU twice a year</p> <p>How many donated?</p> <p>4,567,831 tablets of ALB donated for school-age children, twice a year</p>	<ol style="list-style-type: none"> 1. Share the plan with existing and potential partners 2. Report on the prevalence and intensity of soil-transmitted helminth infections nationwide, and 3. Monitoring and evaluation using sentinel sites
Peru	<p>Plan duration: 2014</p> <p>Area:* local (pilot)</p> <p>Target population: PS: 7,051, S: 16,744</p> <p>Total population: 23,795 children ages 1 to 14 years; two rounds year</p>	<ol style="list-style-type: none"> 1. Strengthen intersectoral advocacy (Ministry of Health - Ministry of Education - Ministry of Social Inclusion) 2. Draft and implement a pilot plan to generate evidence 3. Draft a national plan by the end of 2014 	<p>How many tablets?</p> <p>60,000 tablets of albendazole to schoolchildren twice a year</p> <p>How many donated?</p> <p>A request will be submitted for a donation</p>	<ol style="list-style-type: none"> 1. Finalize and adjust the pilot plan for presentation to decision-makers 2. Political commitment of the government sectors and levels involved 3. Prepare the budget and identify financing sources
Paraguay	<p>Plan duration: 2013</p> <p>Area:*</p> <p>Target population: Schoolchildren 720,000</p>	<ol style="list-style-type: none"> 1. Water quality and water supply facilities and access 2. Hygiene promotion 3. Sanitation facilities 	<p>How many tablets?</p> <p>792,000 (includes 10% probable losses)</p> <p>How many donated?</p> <p>792,000</p>	<ol style="list-style-type: none"> 1. Create a national intersectoral committee for control of STH. 2. Draft a five-year plan 3. Activate the technical committee on NIDs

Country	When, where and for whom	Main activities that the country wants to implement	Necessary medications	Three next steps
Ecuador	<p>Plan duration: 2014-2018</p> <p>Area:* subnational (priority geographical locations, impoverished areas - quintile 1 and quintile 2)</p> <p>Target population: PS: 45,967, S: 114,740)</p> <p>Total population: 160,707 children ages 1 to 14 years, 2 rounds per year</p>	<ol style="list-style-type: none"> 1. Intersectoral and interprogram planning and coordination with roles determined by jurisdiction 2. Identification of the epidemiological situation and ongoing monitoring and evaluation 3. Adaptation of the data collection, analysis and reporting system 4. Multisectoral interventions to improve water, sanitation, and hygiene with public participation and education on the WASH strategy 	<p>How many tablets?</p> <p>353,555 tablets of albendazole to treat preschool and schoolchildren in the priority territories twice a year</p> <p>How many donated?</p> <p>252,428 tablets of albendazole donated to treat school children in the priority territories twice a year</p>	<ol style="list-style-type: none"> 1. Obtain the baseline 2. Request ALB donations for school-based deworming 3. Disseminate, coordinate, and implement the plan
Panama	<p>Plan duration: 2014-2018</p> <p>Area:* National</p> <p>Target population: PS: 279,630 S: 680,899</p> <p><i>Total target population:</i> 960,529 children ages 1 to 14 years</p>	<ol style="list-style-type: none"> 1. Interprogram and intersectoral planning and implementation (e.g. EPI, school health program, growth and development program, Ministry of Health, Ministry of Education, Ministry of Social Development—Opportunity Network program) 2. Coordination with partners and allies to promote the WASH strategy (UNICEF, water and sanitation bureau) 3. Planning and implementation of deworming campaigns 4. Quarterly monitoring and evaluation (integrated with the school year) 	<p>How many tablets?</p> <p>2,113,164 tablets of albendazole to deworm PS and S twice a year</p> <p>How many donated?</p> <p>1,497,978 tablets of albendazole to deworm schoolchildren twice a year</p>	<ol style="list-style-type: none"> 1. Complete disaggregated information in the regions to establish a real, up-to-date baseline on prevalence and intensity of soil-transmitted helminth infections in Panama 2. Present the proposed plan to Ministry of Health officials (regulatory entity) 3. Convene the national committee on NIDs to organize a steering group to validate and implement the proposed action plan.
Nicaragua	<p>Plan duration: 2014-2018</p> <p>Area:* 18 SILAIS (Local Integrated Health Care Systems)</p> <p>Target population: preschool children 414,364; schoolchildren 1,068,359</p>	<ol style="list-style-type: none"> 1. Develop an interinstitutional work agenda with the Emergency Social Investment Fund (FISE) and the Water and Sewerage Company (ENACAL) 2. Include the topics of deworming and healthy habits in the Ministry of Education's curriculum reform for preschool and primary school 	<p>How many tablets?</p> <p>1,500,000 tablets</p> <p>How many donated?</p> <p>1,500,000 tablets</p>	<ol style="list-style-type: none"> 1. Complete the draft Plan of Action under the leadership of the General Directorate of Health Surveillance, with the offices of Health Services, Health Promotion, Foreign Cooperation and Teaching Administration 2. Present the completed action plan to the group of partners PAHO, UNICEF, Save the Children, and others to be identified in order to cover gaps in the current plan. 3. Implement the Plan of Action approved by the high-level authority of the Ministry of Health.

Country	When, where and for whom	Main activities that the country wants to implement	Necessary medications	Three next steps
El Salvador	Plan duration: 2013-2018 Area:* Coastal area and coastal plain Target population: Schoolchildren 414,783	1. Water, hand washing 2. Water, hygiene. 3. Hand washing	How many tablets? 400,000 tablets, twice How many donated? 400,000 tablets, twice	1. Draft the plan with key stakeholders 2. Hold workshops on the plan's logistics 3. Implement the plan at the national level
Bolivia	Plan duration: 2013-2018 Area:* 17 priority municipalities in 5 departments Target population: Schoolchildren 8,500 tablets per year for 5 years 42,500	1. Thorough hand washing after defecating and before eating or handling and preparing food. 2. Continual footwear use in endemic areas to avoid penetration 3. Limit geophagism in young children and on playgrounds.	How many tablets? 42,500 How many donated? 42,500	1. Create a committee to implement deworming program for soil-transmitted helminths. 2. Identify the at risk population through a study or using basic sanitation data. 3. Request medications (through PAHO/WHO, based on the findings from the priority municipalities.
Guatemala	Plan duration: 2013-2017 Area:* Country-wide Target population: Preschool children 965,869 Schoolchildren 701,033 Adults 275,827	1. Hand washing and health education 2. Hand washing, safe water and environmental sanitation 3. Behavior modification, trash collection, and food safety	How many tablets? 9,744 How many donated? 9,744	1. Coordinate with national authorities and cooperation agencies. 2. Hold meetings with the leadership of DRPAP, SIAS, MINEDUC, and PAHO. 3. Coordinate with EPI, PAHO, MINEDUC, and SABIN representatives.

PS: Number of preschool children; **S:** Number of schoolchildren; **ADU:** Number of adults

Area: Refers to whether the plan will have national or subnational coverage (departments, provinces, states, or regions).

CONCLUSIONS AND RECOMMENDATIONS¹⁶

CONCLUSIONS	RECOMMENDATIONS
The 18 countries present at the meeting are interested in and committed to implementing, continuing, strengthening, monitoring and evaluating deworming activities that are: 1) integrated into other public health activities, especially for control and elimination of Neglected Infectious Diseases, 2) integrated with intersectoral activities related to health determinants, and 3) intended to promote government policies for sustainable community development.	<p>Carry out advocacy to make control of soil-transmitted helminth infections a public health priority framed by health determinants, integrated into the country's development plans, and with an interprogram and intersectoral approach to ensure the sustainability of the activities.</p> <p>PAHO's regional NID program should strengthen and expand coordination among the Organization's regional programs in order to promote comprehensive technical cooperation for countries, including entities like ETRAS in Peru, the Strategic Fund for medicines and critical supplies; immunization, nutrition, life cycle, etc.</p>
If control of soil-transmitted helminth infections is to be sustainable, other components must be included in the strategy, such as: access to safe water, improved sanitation, and hygiene.	<p>The component of access to safe water, improved sanitation, hygiene, and healthy spaces should be included in a clear, priority, and intersectoral way, with an ecosystemic approach to the control of soil-transmitted helminth infections.</p> <p>Systematize practices and experiences in the region for broad dissemination among the countries</p>
Integration is an opportunity to strengthen health services. Integration with EPI and nutritional activities is a window of opportunity for deworming preschoolers, while integration into education and healthy schools strategies is an opportunity for deworming school-age children.	Identify, adapt, and implement alternatives for integrating deworming into health systems, drawing from the its correct the translation "Operational Guidelines for the Implementation of Integrated Deworming Activities."
Countries have shown progress in the implementation of deworming activities in the health sector and, in some cases, with the education sector. However, coordination with other sectors, partners, and allies continues to pose a challenge.	Proactively link and coordinate control measures for soil-transmitted helminth infections with other sectors and social stakeholders in each country, including NGOs, UN agencies, and international entities, in order to make optimal use of available resources and expertise.
Integration of deworming into other programs or sectoral and intersectoral activities is a cost effective intervention that requires a thorough and coordinated approach to planning, resource mobilization, implementation, and monitoring and evaluation.	Draft or complete each country's annual action plan for the control of soil-transmitted helminths, making sure that it reflects interprogrammatic coordination and integrated planning, including the components of information systems, supervision, monitoring and evaluation, social mobilization, and health education.
While several countries in the region have been implementing deworming activities for soil-transmitted helminths for over five years, with coverage of over 75%, impact assessment continues to be a challenge.	<p>Evaluate the impact of deworming in countries with ongoing programs in order to make adjustments to interventions for the control of soil-transmitted helminth infections, including standardization of laboratory tests and quality control.</p> <p>In addition to children under the age of 15, it is necessary to deworm other age groups such as pregnant women beginning in the second trimester, women of childbearing age, adults working in jobs such as agriculture and mining, etc.</p> <p>In all countries, implement and strengthen monitoring and evaluation of the activities, including establishing baselines, monitoring process and performance indicators, and evaluating impact indicators to improve decision-making for control of soil-transmitted helminth infections and implementation of actions tailored to the eco-epidemiological situation in each country.</p>
Sustainability is a pillar that must be taken into account in action plans for integrating activities for control of soil-transmitted helminth infections.	Strengthen installed capacity in the priority countries so that they can ensure the sustainability of measures for the control of soil-transmitted helminth infections in the medium and long terms.

¹⁶ Steven Ault, Regional Advisor, Neglected Infectious Diseases, PAHO.

CONCLUSIONS	RECOMMENDATIONS
<p>The participation of delegates from the ministries of education strengthened the joint analysis of integrated interventions for the control of STH in the priority countries. However, it is necessary to link delegates from other ministries and sectors working on access to water and sanitation in order to pursue integrated actions.</p>	<p>It is recommended that PAHO/WHO promote the participation of delegates from other ministries at regional workshops or meetings. Similarly, countries are urged to bring together those responsible for water, sanitation, housing, and poverty reduction, among others, at the national and subnational levels in order to pursue specific activities in the framework of health determinants.</p>
<p>Some countries are accessing donations of albendazole and mebendazole from PAHO/WHO; other countries have expressed an interest in donations, including for other population groups.</p>	<p>It is recommended that countries access drug donations for school age children so that the savings can be allocated for other activities for the control of the soil-transmitted helminth infections, like monitoring and evaluation.</p> <p>Countries interested in accessing donations of antiparasitic medications should back up their request with an operational plan that describes planning, implementation, monitoring, and evaluation, and report coverage.</p> <p>It is recommended that PAHO/WHO and partners such as CWW and Sabin/GNNTD, advocate with the pharmaceutical industry to scale up donations to other population groups (preschool children, women of childbearing age – WCA, adults etc.), and to offer preferable presentations for children under 5.</p> <p>It is recommended that PAHO/WHO disseminate the standardized process for requesting medicine donations for the Region of the Americas.</p>

Part 2

Intensifying Integrated Efforts for Control of Soil-transmitted Helminthiases in the Region of the Americas: Working Together for a Common Goal

Introduction

This meeting is intended to intensify integrated efforts for the control of soil-transmitted helminthiases in the Region of the Americas, as part of the targets for the control and elimination of NIDs established by the countries in PAHO Directing Council Resolution CD49.R19 of 2009, the WHO Roadmap on Neglected Tropical Diseases, and the London Declaration of 2012.

The meeting will also promote coordination and cohesion between partners and governments in order to strengthen collaboration for the control of soil-transmitted helminthiases, with a focus on: 1) increasing coverage of deworming activities through integration with other programs and platforms, to avoid duplication of efforts; 2) improving the accuracy, quality, and timeliness of data collection and reporting; 3) complementing efforts in the framework of health determinants and the Water, Sanitation, and Hygiene (WASH) strategy.

Dr. **Teófilo Monteiro**, Representative *ad int* of the Pan American Health Organization in Colombia welcomed the participants, representatives of the Ministry of Health of Colombia and the Ministries of Health of the participating countries, WHO, PAHO's regional and country representatives, NGOs, and representatives of the pharmaceutical industry.

He noted that Neglected Infectious Diseases, and particularly soil-transmitted helminth infections, are the clearest manifestation of persistent health inequities in the countries that affect the poorest of the poor, especially children. He then quoted a passage from the work of Colombian writer Gabriel García Márquez, *One Hundred Years of Solitude*:

"...so that both of them (Aureliano and Jose Arcadio Buendia) soon suffered from the same drowsiness, felt the same lack of interest in alchemy and the wisdom of their father, and they took refuge in solitude. "Those kids are out of their heads," Ursula said. "They must have worms." She prepared a repugnant potion for them made out of mashed wormseed, which they both drank with unforeseen stoicism, and they sat down at the same time on their pots eleven times in a single day, expelling some rosecolored parasites that they showed to everybody with great jubilation, for it allowed them to deceive Ursula as to the origin of their distractions and drowsiness."

He recalled the mandate of the World Health Organization and the Pan American Health Organization to cooperate with countries on the implementation of deworming activities to combat soil-transmitted helminth infections, but emphasized that this is an impossible task without the participation of other partners and stakeholders beyond the ministries of the health. For this reason, the meeting is a forum to engage partners, allies, and health ministries in a dialogue specifically geared to coordinate these efforts.

Dr. **Steven Ault**, Regional Adviser for Neglected Infectious Diseases of the Pan American Health Organization, conveyed greetings on behalf of Dr. Luis Gerardo Castellanos, Coordinator of the Pan American Health Organization's Prevention and Control of Communicable Diseases Project. He welcomed the participants and representatives of the ministries of health from 18 countries and at least 15 institutions, including multilateral and bilateral agencies, NGOs, pharmaceutical companies, and the other participants mentioned earlier, and thanked them all for their efforts to ensure that children are free from the soil-transmitted helminth infections.

He mentioned the contribution made by experts in recent years in drafting a robust set of operational guidelines to help countries scale up access to deworming for children living in precarious environments. The guidelines were shared with the 18 countries at the three-day workshop that concluded the day before, during which each country drafted a proposed plan for the control of soil-transmitted helminthes, in some cases as a new initiative and in others, as an expansion of an existing plan.

One of the next steps, as a commitment, is to find a way to fund collective actions aimed at making sure medicines reach the children who need them; identifying ways to act on social and environmental determinants like access to safe water, sanitation, and the cycle of poverty that affects children living in at risk areas; and sharing best practices for the sustained control of these parasites, which affect the most vulnerable human beings: children. It is a task that is undertaken with passion; it is an ethical obligation, and it is a way of supporting the human right to health for all.

Dr. **Fernando Ruiz Gómez**, Vice Minister of Public Health of Colombia, after the formal greetings, recalled the wrongheaded approach to physician's training in the 1980s, which was based on the belief that the problem of parasites was solved solely by the advent of new medications to treat them. A public health problem was being approached as a services delivery problem. We now know that it is a structural, intersectoral problem. We cannot improve the situation of malnutrition and the presence of soil-transmitted helminth infections in our children, unless we act on critical underlying issues in education, the environment, economic problems, cultural issues, and access to health services.

He presented figures from the National Health Survey (2010) on the prevalence of anemia in children, particularly in the age groups 12 to 23 months (29%) and 6 to 11 years (59.7%), which are troubling and surely can be attributed in large part to soil-transmitted helminth infections.

He mentioned the most important strides the Ministry of Health and Social Protection has made in the fight against neglected infectious diseases. He pointed out that Colombia was first country in the region [tnt: LAC? or Region?] to eliminate Onchocerciasis and now faces the enormous challenge of maintaining surveillance. The other diseases correspond to the neglected diseases considered priorities in the 10-Year Health Plan; focal interventions for trachoma, especially in Vaupés department; the creation of the Office of the Assistant Director for Communicable Diseases in the Ministry of Health and Social Protection, which has prompted the establishment of new programs and strengthening of existing ones at the subnational level.

He was pleased to report that funding is now available for a national survey on intestinal parasites in the school-age population, which obviously includes soil-transmitted helminth infections. It will serve as the baseline for the design and implementation of a deworming program targeting at risk populations. This will be followed by an impact assessment of the planned interventions. This is one of the main challenges.

Dr. **David Addiss**, Director of the NGO Children Without Worms, discussed the challenges of integration, using the story of the blind people and the elephant. Each of them reported what they thought they were touching: the one touching the trunk said it was a tree branch, the one touching the leg said it was a column, the one grasping the tail said it was a cord or rope, while the one touching the stomach said it was a wall. Each one of them had a unique perspective and while they were all correct in a way, none of it added up to a live elephant. The challenge of integration begins with

a shared vision—or at least an appreciation of everyone else’s vision—of whatever it is we are doing, in this case, control of soil-transmitted helminth infections.

He offered examples of good experiences integrating the work of neglected tropical diseases with programs and platforms for other infectious diseases with an established track record. The strategy for lymphatic filariasis, for example, was designed with the idea of beginning with a two-pronged intervention: 1) interrupt transmission with preventive chemotherapy and 2) vector control. After determining, however, that preventive chemotherapy was not going to have much of an impact on morbidity from lymphatic filariasis, treatment of those who already had the disease was included.

This work requires many different skills sets and integration of different sectors. For example, an intervention in a community with cases of trachoma-related blindness integrated preventive chemotherapy with antibiotics with other pillars: surgery, antibiotic therapy, facial cleanliness, and environmental improvements like water and sanitation (SAFE strategy)

It is important to strike a healthy balance in pursuing an integrated approach, as it has its challenges. Sometimes more emphasis is placed on distribution of antibiotics, but it is necessary work on parallel tracks, with the proper emphasis on water, sanitation, and hygiene.

There are two pillars in programs for the control of STH: anthelmintic drugs, which involves the health system, and the water, sanitation, and hygiene education sector. It means working with preschool and school age children, working in maternal health, and in the workplace, which is why there is an intersectoral approach to medication delivery.

He concluded that control of STH has intersectoral benefits: in addition to health, there are benefits for education, the economy, and development. Of course, intersectoral partners are represented by some of the governments present at the meeting, but they also include international agencies, pharmaceutical companies, NGOs, academia, the media, certain business partnerships, and the communities.

If we combine all of these aspects, we will see a living breathing elephant, rather than its different parts, in other words, a true STH control program. The challenge lies in the partnerships. Bruce Benton of the World Bank said that “partnerships are hard work,” he could appreciate the opportunities. Indeed, intersectoral collaboration is the only way we are going to succeed in having a “living elephant.” The best way to achieve this is through discussion forums such as this one: a profound dialogue and exchange of information that allows us to describe the part of the elephant we are experiencing, share those experiences, and then watch the elephant walk out of this room.

Dr. **Antonio Montresor**, WHO focal point for the control of soil-transmitted helminth infections, offered examples from several countries that illustrated the health benefits of administering antiparasitics for STH. In Vietnam, where the drug was distributed for several years in conjunction with intersectoral actions, prevalence dropped from 90% to almost 30%, and, of course, morbidity was also reduced. In Myanmar, after ten years of intervention, prevalence dropped from 70% to almost 20%, and was also accompanied by a significant decline in morbidity.

As for control of soil-transmitted helminth infections worldwide, the trend in the number of children treated has risen steadily, while prevalence has maintained a downward trend.

It is anticipated that drug donations will steadily increase until 2020. At that time, they will begin to taper off, since many countries will be able to reduce the frequency of administration as a result of their accomplishments.

In conclusion, Dr. Montresor underscored that we are living in a propitious moment for control of STH due to the availability of donations, the interest of a broad spectrum of partners and allies, and the political interest of the countries.

The objective is to make sure new countries join in mass antiparasitic drug administration. The Region of the Americas has a great deal of know-how, available resources, and growing political commitment. This is a great opportunity that should not be missed.

Karen Palacio, Senior Program Officer at the Global Network for Neglected Tropical Diseases, Sabin Vaccine Institute, and responsible for managing programmatic, advocacy and resource mobilization activities in Latin America and the Caribbean, complemented her remarks during the opening session of the meeting with the authorities of 18 countries (see page 3) with a call to action related to opportunities to scale up deworming activities in Latin America and the Caribbean.

She described the London meeting (2012), as the leading effort to combat 10 diseases and eliminate them by 2020. The commitment set out in the London Declaration was signed by the governments of the United States and United Kingdom, the European Union, the World Bank, WHO, the Bill and Melinda Gates Foundation, other international organizations, and pharmaceutical companies like Glaxo Smith Kline, and Johnson & Johnson, which have contributed to this undertaking. As a result, WHO launched its Roadmap to fight against these diseases and is considering holding an assembly this year, in 2013.

Referring to the workshop of the preceding three days, she pointed out that the draft plans prepared by the invited countries include several areas that had not been considered in the past; they identify partners such as those present can support: mapping, meetings, training, activities related to WASH, logistics, and so forth.

She explained the Sabin Institutes mandate and three pillars of action: vaccine development, vaccine advocacy and education, and the Global Network. She noted that in the past four years, they have solidified partnerships with PAHO and the Inter-American Development Bank and with programs such as the Gates Foundation, with the overarching goal of raising awareness to mobilize more resources to promote solutions in the sectors. There have been successful experiences such as the demonstration projects in Chiapas (Mexico) and Recife (Brazil) and in process of implementation in Guyana and Guatemala.

This is the moment for Latin America and the Caribbean to take advantage of these partnerships and international commitments and leadership to achieve the proposed goal for 2020. There is strong political will, as reflected in the experiences described by the representatives from the health and education ministries of some of the countries brought together this week. The Region has a track record of successes in the elimination of other diseases and this new challenge will be one more accomplishment to add to that list.

PROGRESS, GOOD PRACTICES, AND CHALLENGES IN DEWORMING ACTIVITIES TO COMBAT SOIL-TRANSMITTED HELMINTH INFECTIONS IN LATIN AMERICA AND THE CARIBBEAN

PROGRESS IN DEWORMING IN LATIN AMERICA AND THE CARIBBEAN (LAC): STATE OF THE ART, CHALLENGES, AND OPPORTUNITIES¹⁷

NIDs and the working framework for the control of soil-transmitted helminth infections in Latin America and the Caribbean

- Neglected Infectious Diseases affect most groups and communities living in poverty, with a certain degree of disadvantage, as well as indigenous communities and other ethnic minorities. Particularly vulnerable groups like women and children experience impaired cognitive, physical, and nutritional development and poor school attendance. Adults experience decreased job productivity and family and individual income, as well as problems associated with social stigma.
- The interventions available to us for the elimination and control of these diseases are closely tied to what we call the *social determinants of health*, which include lack of access to water, education, income, transportation, safe housing, and health services.
- Combating and controlling these diseases throughout our region is a moral imperative. It is one of the best investments we can make in education, especially for primary school children; in economic development, particularly in poor, rural communities; and of course, in public health.
- WHO has established targets for the control, elimination, or eradication of 17 neglected infectious diseases by 2020. (Table 9). WHO is focusing on the eradication two diseases, treponematosi s and dracunculiasis, and the elimination of human African trypanosomiasis, while another important group of diseases were placed in the control category. For PAHO, the list is different for Latin America and the Caribbean. We have a longer list in the elimination category. In Table 7, the diseases that appear in italics are also included in Resolution CD49.R19 of 2009 for Latin America and the Caribbean.

Chart 7. WHO and PAHO List of Neglected Infectious Diseases

Target	On the WHO list	On the PAHO list
Eradication	Treponematosi s Dracunculiasis	
Elimination	Human African trypanosomiasis	Chagas disease Leishmaniasis (visceral) Leprosy Rabies (transm. by dog) Blindness by Trachoma Lymphatic filariasis Onchocerciasis Schistosomiasis <i>Neonatal tetanus</i> <i>Congenital syphilis</i> <i>Malaria</i> <i>Plague</i>
Control	Buruli Ulcer Cysticercosis Echinococcosis Foodborne Trematodiasis Dengue	Soil-transmitted Helminth Infection

Source: WHO-PAHO

- PAHO has established the following six regional strategic lines for the elimination and control of NIDs 2010-2015, which are described below: *focus actions on factors related to water, basic sanitation, and adequate housing conditions (preventive package); reduce environmental risk factors; improve the health of migrant populations; reduce inequities caused by sociocultural factors and gender; reduce poverty in NID endemic populations; and, implement surveillance and risk assessment systems.*

¹⁷ Steven Ault: Advisor, Neglected Infectious Diseases of the Pan American Health Organization

- Several relevant publications from WHO provide the main guidance for the Region: Preventive chemotherapy in human helminthiasis; Helminth control in school-age children: a guide for managers of control programmes; and, Monitoring drug coverage for preventive chemotherapy.
- PAHO's work to support efforts in the Region since 2008 includes numerous resolutions on neglected infectious diseases, such as: Onchocerciasis (2008); NID (2009); Congenital Syphilis (2010) and Chagas disease (2010). It has also developed a Strategic Plan to prioritize the elimination and control of these diseases in the Region. It has drafted a Guide for countries to prepare integrated action plans for the elimination and control of these NID. Finally, it has issued proposed guidelines for integrated and intersectoral actions for the control of soil-transmitted helminth infections and for approaching them jointly with other health programs or platforms in health.
- This comprehensive approach includes drafting *integrated plans* for achieving national or subnational goals, with significant sectoral and intersectoral political commitment. An *integrated sectoral technical approach* is required, which means having committed and trained technical groups and integrated tools in place to facilitate the local work. A third key component consists of *intersectoral linkages* framed by social determinants, where each sector is given the greatest clarity possible as to its role to make sure that joint implementation is harmonious and coordinated and adds up to more than the sum total of activities. The fourth component is *community participation*, which is the only way to guarantee proper implementation of the interventions, the ability of citizens to exercise their rights, and public satisfaction through the project, which addresses related aspects that facilitate linkages with organized civil society.
- WHO and PAHO have developed numerous guides and tools to help countries make progress in deworming school-age children and preschool age children. Donations of albendazole and mebendazole are available free of charge to all countries that request it using a combined request form. And a technical support team is in place comprised of PAHO staff and focal points in the country offices, who provide assistance in implementing the action plans.
- Working with two partners or allies, the Inter-American Development Bank and the Global Network of Neglected Infectious Diseases, PAHO is drafting a joint policy paper titled: "A Call to Action: Addressing Soil-transmitted Helminths in Latin America and the Caribbean," which includes recommendations on how to scale up efforts to achieve control targets by addressing areas such as national policy and action plans.

State of the art of soil-transmitted helminth infections in Latin America and the Caribbean

- PAHO carried out a systematic review of soil-transmitted helminth infections in the region. It selected 236 works for review, 120 of which met the criteria for publication in technical journals and other specialized sources in 18 countries between 2000 and 2010. The review found that approximately 62% of prevalence studies among preschool children or school-age children at the second administrative level found levels over 20%, which means that the children in these countries would have needed at least one round of antiparasitic medication per year.
- Two major conclusions were drawn from these studies: a) There are gaps in the data on prevalence and intensity of infection and this information is necessary to inform public health interventions especially for preschool and school-age children; b) If this information were taken into account in implementing deworming activities, some areas would require deworming at least once a year, and others even twice. Communities in some areas clearly need access to deworming treatment against soil-transmitted helminths.
- Based on these findings, the recommendation is that each country completes and updates its mapping of prevalence and intensity of infection in the region and adjusts their public health interventions accordingly.
- An estimated nearly 50 million children ages 1 to 14 years are at risk of contracting soil-transmitted helminth infection. Nearly 14 million of them are preschool age and just over 35 million are school-age children. The estimates are based on the percentage of population without access to improved basic sanitation facilities, broken down by rural and urban area according to the algorithm published by WHO in the Weekly Epidemiological Report of June 2011.

- Four groups of countries have been identified as having the highest number of children at risk of infection. In one group, 71% of preschool age children and 72% of school-age children are living at risk of soil-transmitted helminth infection. Actions to achieve over 75% deworming coverage should be a priority in this group of countries. However, it is also important to work in the groups of countries with smaller at risk populations and implement action plans for the control of soil-transmitted helminths.
- In 2011, 25 million children were dewormed in 9 countries: 6 million preschool children and 19.3 million schoolchildren. There is still a long way to go, however, since an estimated 49.3 million children are at risk and 89% of these children are located in 9 countries (BOL, BRA, COL, GUA, HAI, HON, MEX, NIC, PER). The most effort is required in Brazil, Colombia, and Mexico, since 53% of at risk children are concentrated in those countries.
- A significant number of countries are already updating epidemiological data on prevalence and intensity of infection (BOL, BRA, COL, ECU, ELS, GUY, HON, PER, SUR)
- Several of the countries that deworm purchase the medications. Five of 30 countries are currently receiving WHO donations (BRA, DOR, HAI, NIC, PAR).

Challenges for the control of soil-transmitted helminth infections

- Have information available for decision-making: baselines of prevalence and intensity of infection.
- Develop and implement integrated action plans with an ecosystemic approach to the social determinants of health.
- Include measures for the control of soil-transmitted helminth infections in plans for the control and elimination of neglected infectious diseases and poverty reduction.
- Include a mass deworming component in the plans targeting at risk areas and populations and integrated into other public health activities.
- Coordinate with regional partners and allies to carry out activities for the control of soil-transmitted helminth infections, including deworming activities with the Ministries of Education and other ministries, NGOs, and national and international agencies, among others.
- Implement, maintain, and strengthen monitoring and evaluation as a strategic component to inform decision-making.

Opportunities to make progress in control efforts

- Preventive chemotherapy and distribution of antiparasitics are part of the bigger picture, but it is very important to integrate them with other public health activities. This is where we see the importance of undertaking integrated activities that act on certain social determinants of health, such as: improving safe water and sanitation, basic housing, health education, hygiene, hand washing, and the use of footwear. These activities should be undertaken with the relevant partners. It is the only way to have an impact in the medium and long terms that is sustainable and can improve the health of the population.
- There are many partners and allies who can work, and are working, with PAHO to combat neglected infectious diseases in Latin America and the Caribbean. It is important to keep in mind that there are several different types of organizations: those in the United Nations system (WHO, UNICEF), multilateral organizations (Inter-American Development Bank, OEPA); foundations (Gates/BMGF, Carter Center, Izumi, Sasakawa); the private sector (pharmaceutical industry); nongovernmental organizations (CWW, ITI, TFGH, IMA World Health, Vitamin Angels); national institutes, universities, or PAHO/WHO collaborating centers (FIOCRUZ, US CDC, Sabin/GNNTD, IPK Cuba, McGill University, UND, among others). Others include the bilateral agencies of North America (CIDA-Canada, USAID, JICA); Europe (AECID), and South America, and more recently, the Government of Brazil.

VACCINATION WEEK IN THE AMERICAS (VWA): AN OPPORTUNITY TO INTEGRATE PUBLIC HEALTH INTERVENTIONS¹⁸

Objectives

- Vaccination Week in the Americas was established with several objectives
- Promote equity and access to vaccination. While the Region of the Americas is one of the regions with the highest vaccination coverage levels, when we look at the interior of the countries, municipalities with very low coverage can be found at the subnational levels. The objective is to reach all of them and to ensure that vaccination is the right of every child in the Region of the Americas.
- Promote the transition from vaccination of the child to vaccination of the family. A growing number of vaccines are available that can be administered to other population groups, and this is the second objective: to move from vaccination of children under 5 to vaccination of the family.
- Promote communication and cooperation among countries. Going beyond borders, vaccination is an opportunity for communication and cooperation between the border authorities of the countries, since those borders do not exist for many of their citizens.
- Keep vaccination on the political agenda. This has always been the case, but the emphasis is on making sure that this political agenda reaches beyond the high levels of government to the level of municipal mayors.
- Serve as a platform for integrated activities. This was not one of the original objectives, but the countries, which always go step further, saw Vaccination Week in the Americas as an opportunity for integrated activities.
- Vaccination Week in the Americas had its origins in a measles outbreak between Venezuela and Colombia. This prompted the countries in the Andean Region to begin to think about an activity that would allow us to improve vaccination coverage. The first Vaccination Week in the Americas in 2003 was supposed to be limited to the Andean Region, but 19 countries joined in and the first Regional vaccination week took place. Subsequently, the other regions of the world saw this initiative as an opportunity that could benefit them. Europe held its first vaccination week in 2005, and the other regions successively established their own vaccination weeks. In May 2012, the first World Immunization Week was adopted through World Health Assembly Resolution 65.18.
- Vaccination Week in the Americas, and now World Immunization Week, operates in a flexible way. Each country determines how best to use the week to improve useful coverage. In general, however, the program's regional mission and vision establish three objectives for the activities: a) protect the achievements made, b) complete the unfinished agenda, and c) tackle new challenges. The countries have the flexibility to allocate their resources and efforts to any of these three objectives, or a combination thereof, during their Vaccination Week of the Americas. This is useful for reaching areas not usually reached in the regular program.
- Overall, in the eleven years this initiative has been carried out, just over 411 million people have been vaccinated, thanks to the coordinated efforts and commitment of the people working in the countries' immunization programs and the political will of health officials and government authorities at the highest level.
- These outcomes are the result of interinstitutional coordination with United Nations agencies, bilateral and multilateral cooperation agencies, NGOs, and research institutes, among others.

Main accomplishments

- **Reduction in vaccination inequalities:** use of mobile equipment to reach remote areas such as indigenous and rural communities and border populations.
- **Political participation at the highest level:** presidents of the republics, first ladies, national, and local authorities.

¹⁸ Martha Velandia, *Regional Consultant of the Expanded Immunization Program—PAHO Washington, D.C.*

- **Cross-border cooperation:** international coordination has been strengthened by the presence of high-level political authorities in vulnerable and remote areas.
- **Interinstitutional cooperation:** participation of traditional partners and new partners and allies.
- **Broad dissemination of information:** Strong media attention to VWA has underscored the importance of immunization and the power of prevention.
- **Integration of other health interventions:** Vitamin A supplementation, deworming, screening (diabetes, Body Mass Index and blood pressure checks, among others); civil registry of children in remote communities, occupational health issues, sexual and reproductive health education, and delivery of medical and dental care in remote areas, among others.

VWA and integration of other interventions

- While integrated interventions were not part of its original framework, many countries have taken advantage of VWA as a platform for such activities. PAHO has promoted these efforts in recent years (joint efforts between FCH/IM, HIV/AIDS, Neglected Diseases, Healthy Life Cycle, and Occupational Health).
- Some countries have systematically incorporated integrated activities into VWA, while others have done so only sporadically (or they have not reported it).
- Countries that report coverage of both vaccination activities and integrated interventions have shown that it is feasible to achieve high coverage levels for both (Mexico and Nicaragua).
- However, vaccination coverage achieved in the regular program does not seem to be a determining factor in a country's decision to integrate (cases of Mexico/Haiti).
- A guide for joint monitoring/evaluation of integrated interventions is being developed as a tool for countries.

Deworming during VWA

- Deworming is the second most common intervention integrated into VWA, after vitamin A supplementation.
- Some countries have integrated this activity systematically, delivering antiparasitics every year during Vaccination Week in the Americas (Mexico).
- Countries that report vaccination and deworming coverage show increased coverage of both activities during VWA. In this sense, Vaccination Week in the Americas is a very useful platform, but we cannot overdo it. It is important to ensure that it is an integrated effort rather than a burden.
- Guidelines for measuring this intervention are being developed and will be made available to the countries as a tool to monitor how we are doing with these joint activities. The idea is to implement a simultaneous reporting system that can be shared among the programs to be integrated.
- In Brazil, VWA is held yearly in conjunction with Vaccination Month for Indigenous Peoples, an initiative for the mass administration of all vaccines in the national schedule to indigenous populations. This effort also integrates other interventions, such as nutritional evaluations, dental care, cervical cancer screening, and health education.
- Several countries hold health fairs during Vaccination Week in the Americas, which integrate activities and programs and provide both children and adults an opportunity for access to health services.

Lessons learned and next steps

- Since data from integrated interventions are not always reported systematically through VWA, it would be important to create a specific indicator that can be shared with all those involved (EPI-STH - others) and promote more complete reporting.

- It would be important to step up information dissemination and publication of peer reviewed literature on experiences with integration in the countries of the Region to represent the Americas at the international level.
- World Immunization Week is a new global platform to scale up integrated interventions. It is necessary to make sure integration is sustainable.
- It is necessary to improve the reporting system and to substantially improve systematization of information. There are a number of participating countries and a lot to communicate.

LESSONS LEARNED IN THE INTEGRATION OF DEWORMING ACTIVITIES INTO NATIONAL CHILD HEALTH WEEK IN MEXICO.¹⁹

Background

- National Child Health Week in Mexico had its origins in the universal vaccination program, which includes two strategies: ongoing strategies and intensive actions:
- Ongoing activities include the administration of any vaccine to children and adults at any time of year in health centers and hospitals.
- Intensive actions are those that establish epidemiological control of certain diseases in a very short time period. National Health Weeks are included here.
- Vaccination has been taking place in Mexico since 1804. By 1926, it was already a mandatory public health measure: the smallpox vaccine was administered pursuant to a presidential decree and this is how the mass campaigns began.
- The National Immunization Program was created in 1973, at which time mass vaccinations were organized and more vaccines were available. The National Immunization Record was created in 1978. Intensive immunization phases were established in 1980 and replaced by National Immunization Days in 1986. The National Immunization Council was created in 1991 to protect child health. And deworming activities commenced in Mexico in 1993. The National Immunization Days and Intensive Immunization Phases later became the “National Health Weeks.”
- In addition to immunization activities, these weeks also include prevention and treatment of diarrheal diseases and the delivery of megadoses of vitamin A and albendazole.
- As for deworming, the diarrheal diseases and respiratory infections program began in early 1990. And in 1993, the deworming program for children ages 2 to 14 years was launched in conjunction with the national health weeks. The program, which encompassed 887 municipalities at risk for diarrheal diseases, aimed to reduce morbidity and mortality in children with diarrheal and respiratory diseases, improve growth and development, increase hemoglobin, reduce school absenteeism, and improve school performance in children, among others. Today coverage is universal, in every municipality in the country.
- In 2009, an agreement was signed with a nongovernmental organization, Operation Blessing Mexico, for a project called: “Towards universal deworming in Mexico.” With a donation of over 7 million doses of albendazole, the project covered 125 municipalities with low rankings on the human development index and targeted the entire population, rather than just children ages 2 to 14 years.
- Mexico holds three national health weeks. All of them include vaccination and distribution of oral rehydration salts or folic acid upon request, while the deworming strategy is implemented in the second and third weeks.
- The target population for 2012 was 18,403,339 children ages 2 to 14 years. In 1993, activities focused on the municipalities with the lowest rankings on the Human Development Index and the highest incidences of diarrheal diseases. Currently, these activities are carried out country-wide during the second and third National Health Weeks, along with intensive universal vaccination and Vitamin A administration.

¹⁹ Paulina Saldaña Hernández—Secretariat of Health of Mexico—Head of the Universal Immunization Program

- This has been an ongoing activity for the past 20 years, beginning in 1993, when we first began to integrate it into what at the time were called National Immunization Weeks. Since that time, we have implemented integrated activities with other programs or platforms.
- Coverage was 55.07% in 2003 and hovered around 60% over the following three years. We do not have data for 2007 and 2008, but since 2009, coverage has been close to 100%. In 2011 it was 98.2%.
- All health sector staff participate in these activities. We use albendazole in 400 mg suspensions and 200 mg tablets.
- Each State or Federative Entity acquires the medicines through its State Health Secretariat, with its own resources. We conduct monitoring at the central level to make sure they purchase the appropriate amounts to achieve total coverage.

Lessons learned

- Mass deworming in Mexico has had a favorable impact on reducing morbidity from soil-transmitted helminth infections.
- We provide albendazole in 2 doses per year and have observed that it is effective and safe.
- Inclusion of this activity in the National Health Weeks has had more impact than carrying it out separately, since it is possible to convene large swaths of the population, leading to better treatment coverage. Teachers are given training two weeks before each National Health Week in order to reinforce dissemination of information to the communities.

Challenges

- Evaluate the impact of deworming during National Health Weeks: in 2007 we had identified the at risk community for each helminth. At present, we do not have them broken down.
- Scale up regular medication coverage to the entire population, since we are only covering the group ages 2 to 14 years.
- Design innovative strategies to improve distribution and acceptance among users, since there have been years in which we have not achieved desired coverage levels.

Next steps

- We expect to conduct monitoring and evaluation of the impact of deworming in the country. In fact, with PAHO's support, we are poised to move ahead with an evaluation of its impact on prevalence and intensity of soil-transmitted helminth infections.

INTEGRATION OF DEWORMING INTO THE EXPANDED PROGRAM ON IMMUNIZATION IN NICARAGUA: PROGRESS, CHALLENGES, AND EXPECTATIONS²⁰

- In the 1990s, the Ministry of Health promoted and coordinated prevalence studies of soil-transmitted helminth infection in schools and priority municipalities, taking advantage of the healthy schools platforms, with financing from PAHO, Mainel Foundation, and Save the Children.
- Since the 1980s, the integration of deworming and vitamin A supplements has strengthened the commitment and participation of the organized community. In 1994, Nicaragua integrated its deworming day into the Expanded Program on Immunization nationwide, prioritizing the groups ages 2 to 4 years and 5 to 12 years.

²⁰ Ayda Soto—Professional with the PAHO Office in Nicaragua

- Nicaragua is the second poorest country in the world and the national government at the time decided to integrate deworming into the Expanded Program on Immunization precisely because of its poverty map.
- The EPI took on or integrated deworming activities beginning in 1994. At the time, three vaccination campaigns were held annually.
- Two national vaccination campaigns were held annually from 1995 to 2001, and one annually since 2002.
- The current administration is carrying out the citizen power campaign, which includes health promotion activities like vitamin A supplementation and capture of pregnant women, among others.
- The 2012 vaccination week administered over one million antiparasitics.

Progress

- Integration of deworming into the Expanded Program on Immunization relies on the network of services throughout the country; in other words, on the platform, on the network of health services infrastructure.
- Immunization coverage levels and antiparasitics administration targets are included in the Ministry of Health's Institutional Development Plan.
- Medications, supplies, forms, and monitoring sheets are provided and monitored by two offices: the Medical Supplies Office and the Promotion and Social Communications Office.
- The budget for supervision, which is very important, and for monitoring progress in relation to the targets is part of the comprehensive immunization package.
- There are two forms: the vaccination card and the childhood growth and development appointments card. This was thanks to the support of the Izumi Foundation and PAHO.
- The Ministry of Health directs and monitors the preschool and school vaccination campaign, in coordination with the Ministry of Education.
- Feedback to the general public is provided by the Communications Secretariat of the Presidency of the Republic.
- Immunization coverage and targets for antiparasitics administration are included in the evaluation mechanisms of the Campaign Analysis and Balance (Jornadas Análisis y Balances – JABAS).
- Primary education has been strengthened so that it is now possible to reach 1884 schools throughout the country.
- The educational materials used include: a notebook for each student and flipcharts for teachers to provide instruction on prevention of soil-transmitted helminth infections.

Challenges

- Complete the budget to conduct a survey and estimate prevalence and intensity of soil-transmitted helminth infections throughout the country.
- The Ministry of Health's ethics committee is currently reviewing the protocol.
- Integrate the water and sanitation board in order to make better use of available resources in the country.
- Through the Social Investment Fund and the Nicaraguan Water and Sewerage Company (ENCAL), promote improvements to the water and sanitation infrastructure in the schools.
- Ensure that the Ministry of Education's curriculum includes an academic hour on the benefits of deworming, hand washing, and basic home hygiene.
- Develop a comprehensive prevention strategy for intestinal parasitosis that includes: deworming, improvements to sanitation infrastructure, and health education.

Expectations:

- Serve as a model in the subregion to show that deworming can be carried out using existing platforms.
- Take a qualitative step forward in impact evaluation by conducting the survey on prevalence and intensity of soil-transmitted helminthes, and adjust the strategy accordingly in every region of the country.
- The social programs of the government of unity and national reconciliation (GRUN) will evaluate with the Ministry of Education and the Ministry of Family the possibility of integrating deworming into the school lunch program.

Participant questions and comments

C/Any health related activity that fails to take into account the decision of mothers, is doomed to failure. In other words, whether or not a child will be given a vaccine or an antiparasitic ultimately is exclusively up to the mom or dad.

It would be very valuable for us to share all the information that they are going to give us, all of those materials, especially about educating teachers, about what Dr. Ayda Soto just discussed with us. Of course they will have to be adapted for each country, since each one has a different name for the parasites and poor habits are not the same everywhere. So this is extremely valuable, especially with countries like Mexico and Nicaragua which have a 20 year head start over other of our Latin American countries.

C/Thanks for the presentations on Mexico and Nicaragua. It was easy to see the value of the card indicating whether a child has already been dewormed. This is a very good idea and it would be useful to have a little more information on how the card is used, especially for deworming children who perhaps missed class or perhaps for concentrating on children who are not enrolled in school.

A/The card reflects two forms of service delivery: child growth and development monitoring, which is individual, which includes the entire group of at risk children that have to be seen every day in the health services.

This card is used to record the dose administered during the national campaign; but if the child is not the right age, the date the vaccine should be administered is recorded. The dose and antiparasitic administered are recorded at that time.

When the child has been treated during the campaign, it is not necessary to administer antiparasitics when he or she is taken for a health appointment.

Nicaragua has had experience having both a vaccination card and a growth and development monitoring card. It has been useful to combine them in the sense that, children living in remote areas—where it is not possible to have excellent coverage in surveillance and prevention and growth and development—no longer receive more doses than they need.

As far as using the cards, there is a box to record the deworming strategy. The date the medication was administered is noted and that creates the record. In addition to recording this on the national health cards, the nurses have a very large sheet where they record all health promotion activities that were done with the children: vaccination, height, weight, administration of albendazole, and so forth.

In addition, there are two ways of recording this information so that it is not lost. When the child goes to school, he or she takes the card and the teacher or nurse supporting the national vaccination weeks and performing the interventions records the relevant information. The children return home with their cards duly filled out.

If the child does not go to school, two things can happen: One is that when the child is taken to the health center or the hospital for medical care, the card is checked to verify his or her vaccination status; any missing vaccines are administered at that time.

The other way is that people in the communities know who lives there, who has had a child. When that child does not appear in the treatment logs, it is located through a home visit and any needed vaccines are administered then. If the child is older and not in school, then once he or she has been detected, a home visit is done and he or she is sent to the appropriate vaccination center.

Q/Have you had some experiences with community participation involving mothers, etc. in the vaccination and deworming programs?

A/Since the 1980s, Nicaragua has worked through community networks to promote community acceptance of immunization. Each health unit has a group of brigadiers, who take the information to the community for social mobilization. In addition, there are what are called health, family, and life cabinets and the person in charge of health in each neighborhood directs community activities.

In Mexico everyone participates and we have had years of experience with this program, first with immunization, then this program, and then the national health weeks. Deworming has been taking place for 20 years now. I think that has been enough time and there has been broad dissemination throughout the national territory.

The mothers already know; announcements are aired on the radio, on television, and on all sorts of posters encouraging them to participate in the week. They already know about it and they also know that if they do not participate in the health week, medications will be available afterward. Medicine stocks are based on the target population and the response has been good. Coverage levels range from 95% to 98%, and some years, have even reached 100% in Mexico.

Q/Did deworming become a burden for the EPI or were human talent, resources, or capabilities boosted during integration so as not to undermine vaccination?

A/There was resistance at first, especially to the local operational plan, because it was one more activity. But as explained in the presentation, there are two mechanisms: medical supplies, to monitor stocks and distribution. And as for records, well, it was one more activity that had to be done, but it only involved recording information and staff training was provided for all this.

Community participation has been very beneficial. Every head, every leader of those social cabinets, has the targets for each sector and neighborhood. So this leader helps health personnel a lot with these records. The responsibility is shared by the community and the health workers.

As far as participation, the important thing is that the community take ownership of the problem; these activities would fail without community support.

Q/ In your countries, are organizations like churches, Rotary clubs, or NGOs carrying out deworming and how do you coordinate with them??

A/Coordination is necessary. In some cases, civil society organizations like NGOs are offering deworming and this is where it is necessary to combine efforts, because we don't know how to register those activities. The mother says: "I already had them dewormed," but where is the evidence? She might go to the health center and say: "I already had my child dewormed because I participated in a campaign with an NGO ...," but we cannot register that.

Q/What is Mexico's and Nicaragua's impression about adding deworming to immunization? Does it improve immunization coverage?

A/As far as NGO collaboration in Mexico, the only intervention carried out with NGO support was with Operation Blessing Mexico in 2009.

Up to now, the national health card is checked and it has a space to record any NGO activity. If the mother says that they dewormed her child, then it would be recorded there, and if it was not done, then the child will be dewormed. Adverse effects of albendazole have been minimal, mainly abdominal pain. The only NGO with which any coordination has occurred was Operation Blessing.

The national health weeks have boosted immunization coverage and other vaccines have been included in the schedule. But there are complementary activities that are monitored year round and either of the two activities helps us improve coverage.

C/PAHO Nicaragua: Since deworming and vitamin A supplementation began, which happened almost simultaneously, coverage levels improved, but it was not just because of the inclusion. It is like Martha Velandia said: a "win-win" process since the vaccine and also the antiparasitic were being offered. And in Nicaragua most of the regions are extremely impoverished. So coverage is expected to improve and then the hope is to maintain those coverage levels.

In the presentation, it was obvious how they reached the coverage levels. In other words, it improved greatly with the integration of these two activities—vaccines and antiparasitics—in the two groups. Moreover, there are always discrepancies in coverage percentages, since it remains between 105% and 103%. Seen by region, there is a population problem, but coverage levels are maintained for both elements.

Our experience has been that NGOs are not going to engage in mass deworming of the population. This is channeled through the Ministry of Health.

C/In Peru, in March 1999, a deworming program was launched in one region of the country, with the presence of the Minister of Health, but it was not continued. We admire the fact that here it has been maintained for over two decades. I definitely think that political will is key.

And now more than ever, since we can see that an intersectoral approach is needed to address this problem; a minister of health alone is not going to be able to bring in the other ministers, of education, the environment, and so forth. There are more arguments now for justifying and securing political will so that this activity is carried out. This is a lesson that we should take from these countries. Without a doubt, baselines are needed for this, in order to be able to map the country and prioritize certain regions, based on the actual situation.

Q/The Cayetano Heredia Foundation/Bernard van Leer Foundation in Peru congratulates the Ministers of Health of Mexico and Nicaragua for implementing this strategy for over a decade. One of the challenges is documenting the interventions to ensure sustainability. What has been the experience with regard to monitoring and evaluating impact; of the lessons learned, and what would you suggest in terms of what we can do on a daily basis to replicate this experience? How have you dealt with some of the difficulties you have had?

Q/Ecuador: several concerns: Nicaragua has been carrying out deworming activities for more than 10 years. What was the baseline when you began? What was the prevalence in 1994 and what have you been able to achieve after all these years of deworming? Did you make improvements to the sanitation infrastructure of the populations where deworming was carried out?

It is important to establish the correlation between what has been accomplished through deworming alone during those years and through deworming associated with improved sanitation infrastructure. This data of the utmost interest to us, given that in the last figure (Figure 3—page 11), Ecuador is going to reach the target very late, while Nicaragua is just a step away from achieving this objective.

In Ecuador, we are trying to shift our programs from a vertical to a horizontal structure, especially the EPI, which is our star program, but we have a disadvantage in attempting to implement this deworming strategy under the EPI.

A/PAHO Nicaragua: Monitoring was conducted using the national surveillance structure. This means when activities with substantial national coverage take place, the reports are incorporated into logs, with weekly and monthly consolidated reports. Since this had already been set up for the Expanded Program on Immunization, deworming was simply added to the same forms and the same reporting and epidemiological surveillance mechanisms. That is, EPI, using the reporting and national surveillance structure.

A/Nicaragua conducted prevalence studies in 1996, 2004, and 2005, but they were very specifically tied to different regions, departments and municipalities. The criteria used by the country or surveillance office—which had been the one to promote integration of deworming into the EPI—were not derived from a baseline. The criteria that were used were: poverty-stricken areas and percentage of access to drinking water. In other words, they were based on social determinants, which provide some information for incorporating deworming throughout the country.

One of the difficulties faced has been the budget. PAHO, Save the Children, UNICEF, and other institutions have made economic resources available for the aforementioned activities.

The Ministry has approximately half a million córdobas available, which is equivalent to nearly three hundred thousand dollars; a gap has to be filled with support from PAHO and United Nation agencies.

There are no studies documenting environmental sanitation activities or how they have contributed to reductions in prevalence, in addition to deworming. Nonetheless, in an interprogram effort between Health, PAHO's Sustainable Development Program and Help Children Barcelona (HCB) for the first time in three years, the Ministry of Health is on the water and sanitation board, an example of the country has achieved in poor areas, in partnership with the IDB.

The health sector itself can only show evidence, present results, and conduct advocacy. It has no direct influence on those budgets. Since last year, however, from its position on the sectoral board and the water and sanitation board, the health sector has played a leading role in improving basic sanitation, especially in the schools.

A/Mexico: As far as mobilization of impact, we have had a diarrheal disease program in place since 1990, because we realized that it was among the leading causes of mortality in children.

The 2007 figures show the number of cases caused by helminths, which were among the leading causes of morbidity. In 2012, helminth infections ranked 13th as a cause of morbidity.

What we have learned in terms of including it in the national health weeks schedule is that we can achieve better coverage of dewormed children. This has worked well for us.

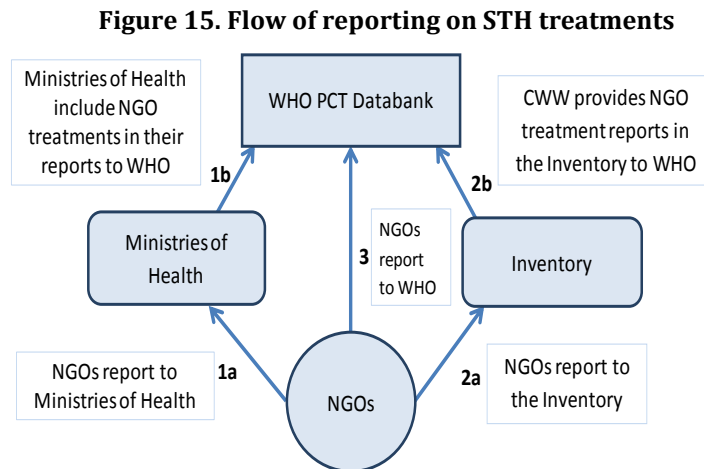
There are no prevalence studies in Mexico. Deworming has been done for about twenty years, but this is something that we need to do: carry out prevalence studies to determine intensity of infection. The sanitation infrastructure has been expanded: in the last census (2010) Mexico had increased the percentage of homes with water available, the availability of sewerage, and the availability of basic sanitation in the home. This coverage has been achieved through an integrated effort with the Secretariat of Social Development, which is responsible for these activities.

MONITORING AND EVALUATION OF CONTROL OF SOIL-TRANSMITTED HELMINTH INFECTIONS: EXPERIENCES, PROGRESS, USES, AND CHALLENGES

GLOBAL NGO DEWORMING INVENTORY: RESULTS, CHALLENGES, AND LESSONS LEARNED²¹

- The main objective is to find the best way to improve coordination, collaboration, and communication among the Ministries of Health and NGOs.
- The inventory is based on Resolution 54.19, which establishes targets for control of STH in children, for which treatment data must be collected.
- Currently, WHO receives deworming treatment data from the Ministries of Health, including the preventive chemotherapy database. This information is available on the WHO website.
- Although WHO collects information from the Ministries of Health, NGOs are also carrying out deworming activities and may not be reporting this information consistently to the Ministries of Health. Hence the need for obtaining this information.
- The objectives of this global inventory are to:
 - Obtain data on deworming treatment by NGOs and include them in the WHO preventive chemotherapy database.
 - Determine the scope of NGO deworming activities worldwide.
 - Provide a platform for NGOs to share information on and coordinate deworming activities, in order to avoid duplication of efforts and the implementation of activities where they are not necessary.

- Figure 15 shows the three main reporting channels for NGOs: 1) direct reporting to the ministries of health, which channel the information to WHO; 2) reporting to the inventory and from there to the WHO preventive chemotherapy database; Approximately six NGOs are using this reporting channel; and 3) direct reporting to the WHO preventive chemotherapy database.



Source: Children Without Worms, 2013

- If NGOs report directly to the inventory, they could be regarded as 'unique' treatments and not included in any of the other reporting channels. Sometimes they report to both the ministries of health and the inventory. These were probably 'unique' because there was no way to determine to what extent the ministries included data from the NGOs. Many ministries did not report this.

- The inventory was created over a two year period, 2009 and 2010, and identified a number of NGOs, but there is no reliable list. An initial list of approximately 100 NGOs was drawn up, but it was not clear which of them were

²¹ Dr. Kim Koporg, Director of Program Implementation—Children Without Worms

carrying out deworming. Twenty-five NGOs (28%) responded to an active survey. Of the treatments reported to the inventory, 18.5 million were 'unique,' meaning these data were not reported to WHO or to the database.

- Another clarification is that treatments reported on the website do not include those used for the program to eliminate lymphatic filariasis. It only includes treatments for soil-transmitted helminth infection.
- A working group led the research and the findings for 2010 indicated the need to repeat the survey in 2011 in order to reinforce the initial findings. WHO suggested drawing up a list of NGOs that report directly to the inventory.
- A total of 17% of NGOs (20) responded to the 2010 survey and some of these were excluded either because they did not provide data or they included data on medications used for other programs (filariasis, schistosomiasis). It may be that many of them did not respond because they were in the middle of active deworming processes. A second reason is perhaps that the data collection approach was very basic. Finally, the 14 selected NGOs reported an approximate total of 65.4 million treatments provided in 2010, which is a significant figure.
- Of the 65.4 million treatments administered by NGOs to all age groups, 35.6% were considered "unique" treatments for the inventory. Total treatments for the preventive chemotherapy database came to 51 million; this means that NGO sponsored deworming activities for soil-transmitted helminths obtained significant figures in 2010. Of the 65 million doses, 8.9% are unique for the preventive chemotherapy database.

- Figure 16 provides an overview for the Region. Treatments considered 'unique' or new are shown in red. As observed, the ratio of unique to non-unique treatments is nearly 50% in the Region of the Americas.

- The forms of treatment include 'definitely unique' treatments, which means the Ministry of Health reports treatment data but we do not know whether they included NGO figures.

- A total 23.3 million "definitely unique" treatments were identified, as well as one million that were 'possibly unique.'

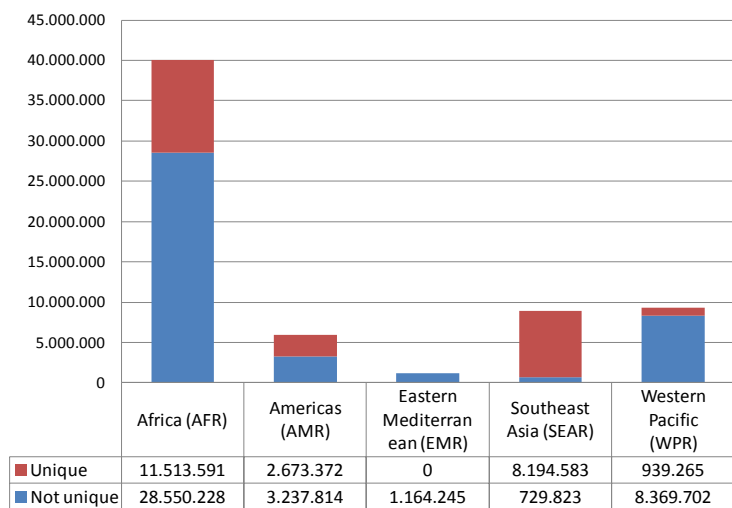
- As contributors to these unique treatments, eight NGOs reported that all of their treatments were 'unique.' 'Unique' treatments were reported in 17 countries 'definitely unique' treatments in 14 countries. These countries did not report any treatment for soil-transmitted helminths to WHO, and seven countries accounted for 88% of the 'definitely unique' treatments.

- Specifically with regard to Latin America and the Caribbean, a total of 5.9 million treatments were reported to the 2010 inventory: 1.2 million for preschool age children and 4.7 million for school-age children. These data came from 10 countries of the region and were reported by seven NGOs.

- As for unique treatments, 2.67 million (45% of the reported total) were 'unique' treatments for the preventive chemotherapy database (690,000 for preschool age children and 1.98 million for school-age children).

- The inventory is limited by the fact that it does not include a complete list of NGOs providing treatment for soil-transmitted helminths. Moreover, it was not easy to determine which treatments were 'possibly unique' and separate them from the reports submitted to the Ministries of Health.

Figure 16. 'Unique' Treatments by Region

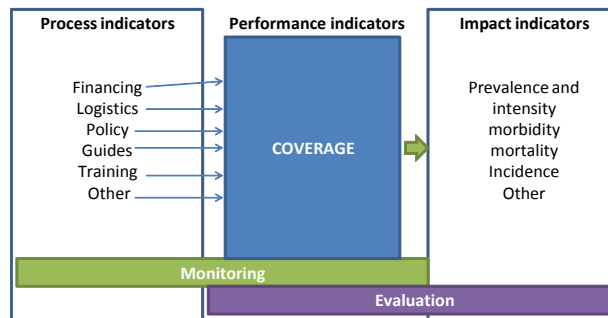


Source: Children Without Worms, 2013

- It can be inferred that the first two of the established objectives were achieved as far as capturing NGO data, integrated with the preventive chemotherapy database. It was not possible to determine the extent to which NGO sponsored deworming activities contributed to control of soil-transmitted helminths infections worldwide. It is hard to tell how representative they are of the universe, but it does show clearly that NGOs are carrying out deworming and the findings were very similar for both inventories.
- The results suggest a gap in reporting. A platform was proposed for NGOs to share information on the Internet, with the results broken down by NGO and country, among other variables. The task of collecting, compiling, verifying, and classifying information was an arduous one. Nevertheless, the NGOs are currently in planning processes for next year and we hope that they find this information useful.
- It is hard to determine just how much they are using the Internet, and for what purposes. Given the results, however, it appears that there is little interest and the possibility of discontinuing this effort in the future is being studied. What is now being evaluated is whether the perspective changes if the timeliness and usefulness of the results is improved.
- In conclusion, NGOs delivered approximately 25% of total treatments for soil-transmitted helminth infections reported in 2010.
- ‘Unique’ treatments reported to the inventory accounted for 8.9% of all treatments of soil-transmitted helminths reported to the preventive chemotherapy database—similar to 2009.
- The 2010 inventory revealed an information gap between the ministries of health and WHO (96% of all ‘unique’ treatments). This is probably because the ministries of health did not report directly to WHO.
- It is also likely that there are information gaps between nongovernmental organizations and the ministries of health.
- Recommendations: Strengthen reporting mechanisms between the ministries of health and WHO (14 countries with “definitely unique treatments’), improve NGO reporting to the ministries of health at the national level (engage the eight NGOs that reported ‘unique’ treatments in a closer dialogue with the ministries of health), reduce the costs and resources to continue the inventories. They should be electronic and try to encourage NGOs to participate voluntarily, without too many electronic messages, letters, and meetings.
- Additional information is available from: www.deworminginventory.org

MONITORING AND EVALUATION FOR DECISION-MAKING ON DEWORMING ACTIONS²²

Figure 17. Monitoring and Evaluation

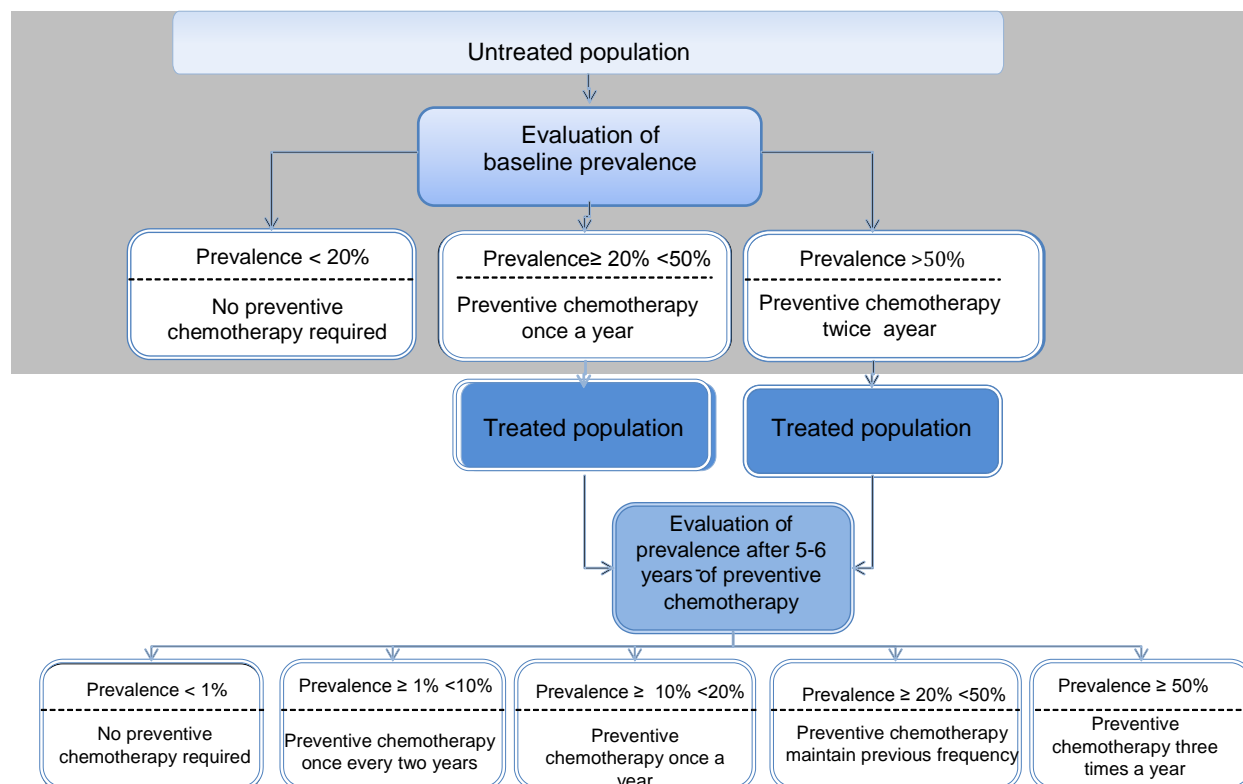


Source: Montresor A., 2013

- There are three basic types of indicators for project monitoring and evaluation: *process* indicators, *performance* indicators, and *impact* indicators (Figure 17).
- Impact indicators show us what the activities have accomplished with regard to prevalence and intensity of infection, morbidity, mortality, incidence, and so forth.
- Process indicators are key aspects identified for monitoring, such as the quality of medications when they are received; whether procurement was arranged on time; distribution to health units or schools; whether storage was managed properly, and so forth.
- Evaluation of trainings should include the number of teacher training sessions delivered, the percentage of schools with at least one trained teacher, and whether the training is adequate or not.
- Other variables to evaluate include the availability of supplies for administering the medication, including: forms, educational materials, reference materials for teachers, and so forth.
- Performance indicators identified for school-based interventions include: percentage of schools that report distribution of medications; percentage of schools with sufficient quantities of medications; and percentage of classrooms that participate in health education sessions. Performance indicators related to medication administration include: number of tablets administered; number of unused tablets reported; and deworming coverage; among others.
- Impact indicators include: prevalence of any soil-transmitted helminth infection; prevalence of each soil-transmitted helminth infection; prevalence of soil-transmitted helminth infections of severe intensity. Indicators on morbidity include: percentage of malnourished children and percentages for anemia or severe anemia; among others. It may be difficult to obtain some of these indicators due to the cost of the supplies required (case of anemia). Therefore, these indicators may be included if the necessary resources are available to measure them.
- Some additional indicators to consider include knowledge/attitudes about the practice; measurements of medication efficacy; coverage of drinking water and appropriate sanitation; and the effects on schools, such as school performance, among others.
- Figure 18 presents the algorithm for decision-making about when to reduce the frequency of the interventions. It is useful in guiding decisions on what to do after antiparasitics have been administered for a number of years. Nowadays there is a survey that helps us decide how to proceed based on the results and prevalence trends after the intervention. For example: what to do if prevalence is below 20%, between 20 and 50%, and over 50%. And after a number of years, from 5 to 6 years, we will be able to determine whether prevalence has been reduced through our intervention. If, however, prevalence is still 20% after 6 to 7 years of distributing the medication, then that prevalence should have changed as a result of deworming activities and interventions in the areas of environment and hygiene, among others. The idea is to cover the problem with the interventions and use the different decision-making thresholds proposed, which are totally applicable. Figure 19 shows the decisions made in Myanmar, based on the results of the measurements taken in 2002 and again in 2012.

²² Antonio Montresor, Department of Control of Neglected Tropical Diseases, WHO, Geneva.

Figure 18. Decisions on when to reduce the frequency of the interventions.



Source: Montresor A., WHO, Geneva, 2013

Figure 19. Decisions about reducing therapy frequency in Myramar, 2002 and 2012 measurements

	Year	PREVALENCE				
		Ecological Areas				Total
		Hilly	Delta	Plains	Coast	
Any infection	2002	28 (22.6–34.0)	92 (87.7–94.9)	72.4 (66.3–77.7)	86.4 (81.3–90.2)	69.7 (66.7–72.5)
	2012	0 (0–1.8)	15.2 (10.7–19.7)	30.4 (24.7–36.1)	38.0 (32.0–44.0)	20.9 (18.4–23.4)

IMPORTANCE OF TIMELY REPORTING AND DISSEMINATION OF DATA TO GUIDE PLANNING OF DEWORMING ACTIVITIES. OPPORTUNITIES TO IMPROVE AND INCREASE DATA REPORTING AND ITS USE FOR PUBLIC HEALTH PURPOSES²³

How can we improve the timeliness and quality of reporting of deworming coverage data?

- **Steven Ault—PAHO Washington:** We have noted that in our region, some international NGOs agree to share information on the coverage levels of their activities in the countries, while others, for unknown reasons, do not collaborate with the ministries of health or the WHO database. The community of international NGOs meets periodically during the year to discuss topics of mutual interest, including deworming. The ask is that NGOs that are involved in deworming and share their coverage data talk to and persuade other NGOs that also carry out deworming to share their results as a contribution to planning to achieve the objectives.

²³ Group discussion: Participant responses to specific questions.

- **Guillermo Zea-Flores—Global Health Partnership Initiative, Guatemala:** The key would be that ministries of health assume their steering role and require mandatory reporting from NGOs working in their countries. In Guatemala, some entities are doing this very sporadically and they do not report. We think the important thing would be to promote leadership in health.

What difficulties have NGOs experienced in contacting the ministries of health in order to share their information with them?

- **Clayton Ajello—Vitamin Angels:** It is often hard to tell who to report the data to, and it is not clear whether it should be reported at the district, departmental or central level. An added complication is that many NGOs submit the deliverables to an intermediary NGO, and that is our responsibility. We sometimes try to encourage the local NGOs to report the data to the authorities. We need to understand what the reporting process is and to whom we should report.
- **Antonio Montresor—WHO:** The main issue is when an NGO is asked whether it is carrying out deworming activities and what the evidence shows is that the health sector needs to take the reins of leadership in the distribution and administration of the medications. The steering entity, in this case the Ministry of Health, should take responsibility for administration, education, and impact. NGOs are not in charge of administering, yet we see that NGOs administer the medication. Therefore, the ministries should be the ones to deliver the medications. Fortunately, the NGOs are filling these gaps, but our aim is coordination between the ministries and the NGOs, not just for deworming activities, but also for education and sanitation activities, and so forth.
- **Miguel Davila—PAHO Peru:** The leadership role of the ministries of health should be strengthened in this area. What happens is there isn't the political will to take this on as a public health problem, then it is going to be very difficult to strengthen leadership in an area that does not interest them. If there is interest in the issue, the best way to ensure that information arrives in time to inform decision-making, the proper channel, is through epidemiological surveillance systems. There is evidence of NGOs that deworm and never report to the authorities and others that, when you ask them for data, respond that they are carrying out deworming activities but do not have any statistics. The problem is leadership.
- **Steven Ault—PAHO Washington:** PAHO works with the ministries of health on obtaining and sharing deworming coverage data on a regular basis. It would be useful for NGOs and other institutions to know, once again, that at the beginning of each year, between January and February, PAHO requests coverage information for the previous year. If the NGOs wish to collaborate, they can also share their coverage data with the ministry of health, or else with PAHO if for some reason they do not share it with the ministry. The data is collected and analyzed in January and February each year.
- **Nelly Zabaleta—Cayetano de Heredia Foundation:** It would help to have a standard reporting format and decentralize the information. In Peru, the Regional Health Departments operate under the regional governments and they are administratively autonomous. The key lies in facilitating communication between health regions and the central headquarters through periodic data collection using a standardized format. Although NGOs do not administer directly but instead act as facilitators, should this situation arise, it should be reported through the Regional Health Departments, which would then forward the information to the central level.
- **Kim Koporc—Children Without Worms:** One of the main issues is that the NGOs present in this room already have good relations with the health authorities and with PAHO. The issue is how we can talk to our NGOs so that they are aware of the importance of reporting treatment data. We have been at a lot of meetings, but we should adopt better communication strategies. I agree with the need for a standardized or single form.
- **Martha Saboyá—PAHO Washington:** As far as data collection, we have seen both situations: countries where NGOs are distributing medications; large NGOs that distribute to small NGOs, which in turn, distribute in the countries; NGOs that have tried to contact the health authorities to report on their activities and received no response. The situation is clear. It is desirable to create a bridge of communication between NGOs and ministries,

which means that both sides need to make an effort at dialogue. Some ministries are aware that NGOs are carrying out activities in their territories but do not seek them out or assert their leadership. Reporting is actually just one variable in coordination, which could also include coordinating procurement, distribution of tablets, and so forth. Finally, reporting is not complete and information does not flow properly. Another point is the data from the ministries; oftentimes it is an uphill battle to obtain it, despite timely requests and reminders. Some countries carry out sustained activities and those are the ones that do the best job of reporting to us, but it is important to work on data quality. It is relevant to have information disaggregated by age group and by distribution at the subnational level.

- **Santiago Nicholls—PAHO Washington:** The donations are not always appropriate. On one occasion an NGO provided a medication that was not the required dosage. Fortunately the receiving country knew enough to request that the donation be made in the required presentation.
- **Kari Stoever—Global Alliance for Improved Nutrition—GAIN:** One thing that the NGO inventory project offers us is the opportunity to see where the best practices are, from NGOs to governments, and from governments to the PAHO Country Offices. To summarize: 95% of the 23 million unique treatments come from countries that had sent deworming reports to WHO. Despite the communication gaps, there is evidence from the reports. The reporting chains should be strengthened.
- **Adelina Barrantes—PAHO Panama:** How are NGOs regulated and who do they answer to? Leadership is the key. Similarly, the donors should also require how the donation was made and what results were obtained
- **Steven Ault—PAHO Washington:** This process of trying to improve the quality, timeliness and coverage of data on deworming and other neglected diseases has been a challenge for our regional program on neglected infectious diseases. We are trying to make this easier for both our country counterparts and PAHO staff. There is already a standard data collection form for the various neglected disease programs. We know that other regions of the world are taking note of our lessons learned and trying to standardize their data collection forms. The variable of gender has been added and this has been well received in all the regions and will help the ministries target their efforts.
- **Mark.H.Bradley—Glaxo-Smith-Kline:** While the new forms are an excellent development, it is inefficient if data is only recorded on paper. We should start using automated systems through mobile devices, like simple text messages, that can be sent to the different levels of administration. It is a matter of making the decision to make better use of technologies that are available at little or no cost. Furthermore, from the donor's perspective, it is important that governments monitor and know what NGOs are doing in their countries. It is important to know what medication is being used, its quality, place of manufacture, efficacy, and expiration date, to make sure they are not getting rid of expired medications. Non-regulation can have very significant consequences for a country, for example, a cascade of adverse events due to the improper prescription of a medication.
- **Antonio Montresor—WHO Geneva:** We have very good NGOs that want to help the countries, but there are others that have tunnel vision: they only offer their benefits to a small community and do not report. Certainly, quality control should be improved and this does not behoove those NGOs. If an NGO is serious, it is willing to open itself up to reporting.
- **Santiago Nicholls—PAHO Washington:** In short, the emphasis should be on governments and ministries of health shouldering their responsibility to know about and coordinate NGOs and obtain the necessary reports from them. Standardized reporting formats are also required to obtain deworming coverage levels. Ministries of health could consider the proposal of using mobile technology to improve mechanisms for collecting data from coverage reports.

How can we strengthen monitoring and evaluation for decision-making in soil-transmitted helminth control programs?

- **Martha Velandia—PAHO Washington:** The regional office is working on a toolkit for vaccination monitoring and evaluation at every level. It is necessary to begin with administrative data and trends over time. The next thing is to look at rapid monitoring of vaccination which, as we know, does not actually estimate coverage levels, but serves as a programmatic tool to evaluate whether the work is being done well. Then, lot quality sampling is evaluated to determine how robust the statistics are and consider whether a particular locality is meeting the monitoring standard that has been established. Finally, coverage surveys are conducted, which are very well documented and, entail a higher cost and considerable statistical detail. These four chapters will facilitate systematic data review in the countries not only for vaccination but also for deworming.
- **José Pablo Escobar—PAHO Colombia:** the issue of the coverage indicator was discussed at previous meetings. We should insist that this indicator be very clear, in both its numerator and its denominator, to make sure we are all talking based on the same criterion and to facilitate comparability.
- **Steven Ault—PAHO Washington:** It is important to conduct a baseline survey in order to ascertain prevalence and intensity of soil-transmitted helminth infection. Impact should be measured after five years. Sentinel sites have been studied to monitor the impact of the programs.
- **Antonio Montresor—WHO Geneva:** The issue is a practical way to conduct monitoring. The baseline survey requires a large population, for obvious reasons. We could see the data from Vietnam and Myanmar
- **David Addiss—Children Without Worms:** Sentinel sites are used to determine the impact and coverage of anthelmintic treatment and activities for safe water and sanitation. Access to medications is also measured, in order to understand the dynamics of mass treatment.
- **Enrique Vásquez—PAHO Brazil:** This is a good example of the need to work with multiple databases with different information systems. For example, besides the reports from the countries, information from drug manufacturers could be used, distribution of their products to NGOs. This would be useful for comparing information and identifying needs for improving information. Pharmaceutical companies are a key factor.
- **Julián Trujillo—Ministry of Health, Colombia:** Colombia is creating situation rooms and public health observatories. One aspect of management would be to include these indicators for soil-transmitted helminth infections and deworming coverage in the observatories and situation rooms. This makes it possible for the indicators monitored to be reported by local authorities, the mayors, contributing to management by local authorities
- **Guillermo Zea-Flores—Global Health Partnership Initiative, Guatemala:** In the process for the elimination of onchocerciasis, the work was begun in six Latin American countries, where 1,800 communities required medication and monitoring and evaluation. A group of communities was selected as sentinel communities that were representative of their geographic communities. All of the information possible was collected at that time. Later, new evaluation methods emerged and were gradually incorporated. Initially, there was criticism because the work was going to be more intense in those sentinel communities. What was done was to improve control of treatment coverage levels in the communities that were not designated as sentinel. More emphasis was placed on quality control of these measures. The final evaluations covered some communities that were not sentinel communities.
- **Steven Ault—PAHO Washington:** Prevalence data were based on ecological zones. WHO and PAHO recommend the ecological zone methodology for national and subnational surveys. The establishment of sentinel sites for monitoring coverage levels, impact, and improvements to water and sanitation must reflect the distribution of sentinel sites identified by ecological zone in the country, based on environmental conditions. In terms of monitoring this disease, we did not see any type of indicator for monitoring aspects related to social determinants, which also play a role in transmission.
- **David Addiss—Children Without Worms:** Ecological zones are important when we are in a complex environment or where treatment has commenced in some areas and not in others. As the prevalence of infection declines,

spatial heterogeneity increases which means that we would expect to have a report on prevalence of infection, before treatment begins, where prevalence is high, but it declines in some areas over time. We have to consider these trends when looking at monitoring for decision-making.

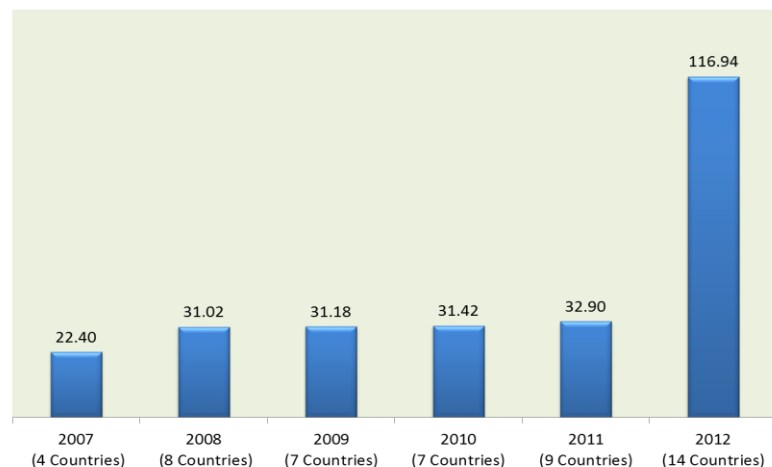
- **Theresa Gyrokos—McGill University:** A sentinel surveillance project is currently underway in Loreto, Peru, in the schools. The state of Loreto has seven provinces and each provincial laboratory has been trained by health workers and a laboratory person to be able to monitor these sentinel schools. Furthermore, we could have NGOs that provide microscopes or some other training materials that health authorities could use for this activity. There could be collaboration between NGOs and governments in some areas, for example, on medications provision.
- **Mark.H.Bradley—Glaxo-Smith-Kline:** Not all the foundations that work in health donate medications. We know that in an effort to improve knowledge, we facilitate the manufacture and availability of products. With regard to access to medications (albendazole and mebendazole), with the donations from Johnson and Johnson and Glaxo Smith Kline, there is a sufficient quantity of donated medications. The ministries of health of the countries do not need to purchase these medications. There are enough antiparasitics to cover the global at risk population. There should be no impediments to access to medications, since they are available for their use and they are free.
- **Santiago Nicholls—PAHO Brazil:** It is interesting that many countries are focusing on this public health problem and that increasing the donations is being considered. The possibility of having donations of suspensions for preschool age children (under age 4) is currently studied.
- **Antonio Montresor—WHO Geneva:** WHO recommends rapid access to the school population in order to determine the strategy in the community. Monitoring of the school population should be an indicator for the success of a school-based deworming program. School-age children are representative of all groups; however, if only schoolchildren are treated, and the rest are not, they will no longer be representative of the rest of the community.
- **Mark.H.Bradley—Glaxo-Smith-Kline:** The duration of GSK donations is open-ended. It is a milestone until 2020, but that is not an endpoint since we realize that, because deworming is a control, rather than an elimination measure, children will continue to be vulnerable to soil-transmitted helminth infections in the long term. Regarding the development of new anthelmintics, there is a broad spectrum of imidazols with anthelmintic activity and other patented active products to back them up.
- **William Lin—Johnson & Johnson:** I agree with Mark. This is a control program. Donation is not a sustainable global solution. We need to achieve the goal of eliminating soil-transmitted helminths in the long term. We have already seen the progress made in Myanmar and Vietnam.
- **Antonio Montresor—WHO Geneva:** As far as the question about resistance to medications, a couple of publications are available on this topic. One of the reasons for this report has to do with the measures used. We know that the drug is not 100% active in all cases. There may be children who are treated but not cured and those parasites continue to lay eggs. The indicator might not be the cure rate, but the rate of parasitosis reduction. The publication is found in the meeting materials that were distributed to each participant.
- **José P. Escobar—PAHO Colombia:** Question for the donors: what presentations of albendazole are available to donate to the countries, both suspensions and tablets, and can tablets be donated in blister packs in individual doses or only in multi-dose presentations? This is due to restrictions in Colombia on receiving donations of loose tablets. Also, in the health system, insurers are required to have the medication available for their beneficiaries. The country purchased albendazole at a reasonable cost, but some companies have the medication at 500 times the price. And there is also the question of whether the medication can be counterfeited.
- **Santiago Nicholls—PAHO Washington:** We will respond to these questions during the session on Colombia.

PANEL ON THE ROLES OF NGOS AND INTERNATIONAL ORGANIZATIONS AND THEIR PERSPECTIVES ON DEWORMING TO COMBAT SOIL-TRANSMITTED HELMINTH INFECTIONS IN LATIN AMERICA AND THE CARIBBEAN

CHILDREN WITHOUT WORMS²⁴

- Founded in 2005 as a partnership between Johnson & Johnson (J&J) and the Task Force for Global Health. It was created as a medications donation program to help arrange for donations of Vermox® (mebendazole) to treat soil-transmitted helminth infections in school-age children. But the program also included technical assistance for the countries that receive mebendazole and a comprehensive approach that includes water, sanitation, and hygiene. It also urges NGOs to work on control of soil-transmitted helminth infections and serves as the secretariat for an advisory group called the Soil-transmitted Helminth Infections (STH) Advisory Committee.
- This STH Advisory Committee was established in 2006 and originally called the Mebendazole Advisory Committee. Comprised of a group of experts on soil-transmitted helminths, it offered advisory services on the implementation of appropriate strategies for the use of mebendazole. The Committee is tasked with reviewing and approving country requests for mebendazole donations to control soil-transmitted helminth infections in school-age children.
- Since its creation, *Children Without Worms* has facilitated the donation of mebendazole to several countries in Asia, Africa, and Latin America every year from 2007 to 2010. Nicaragua is the only country in the Americas that has received mebendazole donations through CWW.
- In 2012, there was an increase in the number of tablets donated and in the number of countries assisted, as shown in Figure 20. This was due to an increase in the number of doses donated by J&J, via WHO (200 million per year) and an increase in the number of donations from GSK (400 million albendazole tablets per year), also via WHO.
- In addition, technical assistance workshops were delivered to the health and education sectors and NGOs. In 2012, regional workshops were held in Manila (Philippines) and Dahka (Bangladesh).
- Through donations from the Izumi Foundation, and in collaboration with the Ministry of Health and PAHO, CWW has supported a pilot project for a baseline survey of soil-transmitted helminth infections in three municipalities of Bolivia, which also includes deworming and hygiene education in eight schools. This partnership has been rewarding. With a donation from the Izumi Foundation, and in partnership with the Ministries of Health and Education and PAHO's close involvement, CWW also provided technical assistance to Nicaragua's program on training and hygiene education for teachers and health workers.

Figure 20. Number of doses of Mebendazole donated (in millions) and number of countries supported by Children Without Worms, 2007-2012



Source: Children Without Worms, 2013

²⁴ Dr. David Addiss, Director of the NGO Children Without Worms

- A study was carried out with the Global Network for Neglected Tropical Diseases (GNNTD) and George Washington University to study Nicaragua's experience.
- With donations standardized through WHO, facilitates storage and customs procedures as well as planning and better distribution to countries. The 600 million doses available annually amount to 5 billion doses by 2020.
- With the transfer of responsibility, decision-making and authority over the donations from J&J to WHO, and the partnership with GSK, this is a propitious moment to grow in our role and discern where we can better support global programs, maintaining the approach to soil-transmitted helminth infections in an integrated environment with other programs for neglected tropical diseases.
- Activities revolve around facilitating the promotion of albendazole and mebendazole donations, working closely with WHO, PAHO, and pharmaceutical donors.
- It supports other partners like NGOs and the health, education, and water and sanitation sectors.
- It facilitates dialogue and meetings on control of soil-transmitted helminth infections.
- It continues to provide technical support and guides. CWW is still the secretariat of the Soil-transmitted Helminth Infections Advisory Committee. It is starting to get involved in monitoring and evaluation.
- There is interest in identifying decision-making capacity to scale down toward the lowest level of frequency of drug donations, so that mass donation is no longer necessary.
- Recent activities include continuing to assist J&J with the supply chain to make sure the shipments are made and the product reaches the countries.
- New partnerships have been forged in the area of water and sanitation. CWW now has a focal point for water and sanitation (Stephanie Ogden).
- In December 2012 a dialogue was organized between the Neglected Tropical Diseases and the water and sanitation sectors, with support from the Bill and Melinda Gates Foundation.
- A diploma training course was held for WASH practitioners, with scholarships from *Sightsavers International*.
- CWW is working with the World Health Organization on monitoring and evaluation processes, at the Organization's invitation.

OPERATION BLESSING INTERNATIONAL²⁵

- Operation Blessing International was founded in 1978 by MG Robertson, in conjunction with Pat Robertson of 700 Club, to alleviate needs in the communities. It became an international nonprofit organization in 1986 and was recently classified as one of the 100 organizations worldwide that provides humanitarian aid.
- Through an international company, it works diligently to combat parasites through deworming. Its mission is to demonstrate the love of God in alleviating human needs and the suffering of people in the U.S. and around the world.
- Every deworming campaign has three phases. The first is the precampaign, which involves thorough research and planning with the participation of the ministries of health and education in the countries. It engages local churches that serve their parishioners. Distribution centers are selected based on information regarding the prevalence of parasites in the community and previous distribution areas, to avoid duplication of efforts.
- Volunteers from local churches are mobilized based on a distribution plan and a preregistration list. They receive training in parasitosis to ensure they are well-versed in the issue, can serve as multipliers of appropriate messages, and know how to teach the correct way to administer the medications, health promotion and parasite prevention activities, and the proper dosages for treatment and control.

²⁵ Dr. Geraldina Motta

- The program seeks to be inclusive, and makes extensive use of volunteers, but in partnership with the ministries of health and education, and seeking out new partners.
- In the second phase, the antiparasitic medication is administered, specifically albendazole and mebendazole, following the recommendations of the ministry of health in the country. Trained volunteers administer the medication.
- The first deworming campaign was carried out in 2003 and the process has been strengthened since that time, benefiting millions of children worldwide.
- The first level of intervention consists of treatment of the individual and preexisting infections. The second level is based on controlling the infection in the community as a whole, to prevent the establishment of foci of infection. Activities target the most at risk populations, namely children ages 12 months to 14 years. The third level includes culturally appropriate education. Mothers are given training so that, in addition to good hygiene habits, they recognize danger or warning signs in their children that require immediate attention.
- Post-campaign monitoring should take place immediately to ensure the efficiency and effectiveness of activities during the campaign.
- Successful cases: Honduras, where they have been working directly with the Ministry of Health through the Healthy Schools program. In association with the World Food Program, they serve a total of 1,300,000 children ages 6 to 12 years. OBI Honduras coordinates with these institutions for delivery of medications: albendazole 400 mgs. It implements integrated programs for the sustainability of the processes and the contracting of the selected professional staff person. The medication is delivered to Tegucigalpa and from there to the other departments of the country. From there it is distributed to the municipalities and then to the public schools for distribution to the beneficiary children.
- OBI met with PAHO in Honduras to plan a pilot deworming activity for children ages 1 to 5 years, integrated into the National Vaccination Campaign.
- In Guatemala a letter of understanding with the Ministry of Public Health and Social Welfare and the Ministry of Education aimed at reaching all school-age children. OBI has worked in Guatemala since 2010 and has dewormed some 1,600,000 children. The current strategy is to work in partnership with the health and education sectors, integrating analysis of the medication, establishment of the baseline, and subsequent measurements in order to determine the impact of the activities.

SAVE THE CHILDREN (USA)²⁶

- The organization is present in more than 110 countries, with the mandate of promoting a positive impact on children. It has a significant presence in the countries of the Americas, although in some countries it carries out activities but does not have a physical presence with a country office.
- It operates on a theory of change. Its vision is to be innovative, through evidence that can be scalable. For this reason, it shares with other organizations and conducts advocacy so that the experiences are incorporated into national programs and scaled up to reach the greatest number of beneficiaries. This is where advocacy is carried out in partnership or association with other organizations.
- Its approach is comprehensive and child-centered, and deworming is just one small part of the school health and nutrition program. It works in partnership with ministries of health and education, and with other national NGOs.
- The health education program is comprehensive and includes activities to ensure a long-term impact on the prevention of diseases and infections.
- Save the Children works to educate agents of change. Children can learn and multiply their knowledge, and put in practice what they have learned, especially in hygiene and basic sanitation.

²⁶ Dr. Seung Lee, Director of School Health and Nutrition—Save the Children.

- Some weaknesses have been identified, especially in relation to deworming data.
- As far as integration, treatments are just one part of the activities, since additional support and integrated interventions in hygiene education, water and sanitation, and specific works and procedures are required in order to speak of control of neglected disease. Also, the NGO can complement activities in areas where governmental actors cannot go.
- Perhaps more information on this NGO could be added, such as the number of children and conclusions.

VITAMIN ANGELS²⁷

- Vitamin Angels is a donor of essential micronutrients to nongovernmental organizations, with the possibility of expanding the intervention to control of soil-transmitted helminth infections at a low cost.
- Its mandate is to mobilize private sector resources in order to provide micronutrients, especially vitamin A, for distribution to at risk populations. The technical intervention focuses on the distribution of micronutrients and supplements to malnourished children.
- Albendazole is being administered as part of the program, to combat the effects of micronutrient deficiency in parasitized children. A business centered approach is used to ensure the sustainability of its activities, particularly in the supply and the allocation of resources. To this end, it can make use of NGOs that are already working in the localities. The partners are responsible for the programs.
- Every year, over 535 million beneficiaries require micronutrients and vitamin A supplements. Nearly 150 million children do not have access to these benefits, and they are Vitamin Angels' target population.
- We want the local NGOs to know who we are, and we want them to be the ones to direct the activities and disseminate their social purposes and mandates, with us as their donor partners. But we also make an effort to ensure that the information is shared with the national health authorities.
- Vitamin Angels frequently works with low budget organizations such as orphanages or other groups with precarious financing and that lack connections to other services that are not readily available
- Indicators have increased significantly in the past five years: in 2012 (the organization) benefitted 26.4 million children in 42 countries, working through 159 local partners around the world. These figures represent 20% of potential beneficiary children.
- We try to make albendazole available to as many children as possible. The 7 million beneficiaries represent 27% of the total Vitamin A beneficiaries annually.
- In 2012 and 2013 (the organization) worked in nine countries in Latin America and the Caribbean, providing 4.3 million children with vitamin A, but reaching less than 24% of them with albendazole.
- Combined programs for deworming and micronutrient administration is one of the best alternatives to try to reduce the impact of harm caused by malnutrition at an early age, and this would be a prevention option, especially in school-age children.
- Vitamin A and deworming is a strategy that is reaching approximately 30 million children, 7 million of which also receive albendazole. The platform of vitamin A administration is growing by about 15% annually and could absorb greater coverage of deworming at little or no additional cost. The challenge lies in answering the question of how to access the antiparasitic and especially how to access more local distribution partners, such as NGOs able to reach children that other organizations or institutions have not reached.

²⁷ Dr. Clayton A. Ajello, Technical Advisor – Vitamin Angels

WORLD HEALTH ORGANIZATION²⁸

- The small team and focal point in Geneva proposed Resolution WHA54.19 for the control of soil-transmitted helminth infections.
- Data are being compiled to document progress towards the achievement of the global objective.
- Manuals are being prepared for treating preschool and school-age children and pregnant women, at no cost.
- Negotiations were made for donations of medicines by GSK and J&J and this is moving ahead with the administrative management of donations to WHO, with the evaluation of requirements and distribution of those requirements to the countries.
- It facilitates technical cooperation for countries that request it, through the regional office, with the consultant who is the focal point for the issue.

DISCUSSION PANEL ON THE ROLE OF NGOs AND OTHER INTERNATIONAL ORGANIZATIONS IN DEWORMING AND CONTROL OF SOIL-TRANSMITTED HELMINTHS INFECTIONS

This session was an opportunity to hear the responses of the participating NGOs to the question below. The main points of consensus were summarized at the end of the session.

What is the role of NGOs and international organizations in deworming in the countries of Latin America and the Caribbean?

- It has been amply demonstrated that some of the international NGOs represented here have a wealth of resources and experience that certainly could result in excellent partnerships with the ministries of health and education and other levels of government. In addition, they have competitive advantages, one of which is their ability to reach remote areas, and can offer the ministries of health or education their willingness to surmount barriers to access. Partnerships could be forged with national or subnational governments as well as directly with other NGOs.
- It is clear that several NGOs have forged key partnerships directly with the ministries of education and health, as in the case of Belize, where Vitamin Angels and other local NGOs contacted the Ministry of Health and PAHO to express their interest in distributing vitamin A with antiparasitics. This was an excellent model that is still operating in Belize and it shows what can be accomplished through partnerships and integration with the regular vaccination program.
- It is important to see deworming not as an isolated program, but rather as a package of interventions that promote health, education, and the well-being of children in at risk populations.
- It could be useful enough if some, or more of the NGOs involved in deworming took an interest in hygiene education, training, and the design and distribution of materials to strengthen the capacity of communities in these important health determinants.
- Partnerships between NGO are also relevant and necessary. Many of them depend on in-kind donations rather than money, which limit the resources available to them for their activities. Partnerships contribute to achieving the objective.
- These partnerships should take indigenous NGOs into account. If governments can help identify them, it is important to contact and collaborate with them. There have been successful experiences in different areas, especially the support they offer in distributing medications in the hard to reach areas where they are working.
- It is abundantly clear that donations are only for the health authorities, for ministries of health, but they can collaborate with NGOs for distribution. The request should come from the Ministry of Health. Should the request

²⁸ Antonio Montresor, Department of Control of Neglected Tropical Diseases, WHO, Geneva

come from an NGO, delivery should be channeled through the national authority, which should direct the NGO's work based on epidemiological studies by the Ministry of Health. What the NGOs need to do is communicate with the ministries and engage them in dialogue so that the ministries understand their programmatic responsibilities. If they request mebendazole, their statistics should be reported to the ministries. In this way, national and local governments will see the utility of the work NGOs are carrying out in their territories.

- NGOs can also play an important role as channels of communication when there is no intersectoral coordination in the regions where they are working. It is necessary to understand that the problem revolves around neglected infectious diseases. They have been prioritized so that they can be addressed, so that they, and their impact, are understood as a public health problem, and also so that the programs for them are efficient and very viable. Many governments find it difficult to have an impact, depending on the subregion and the extent of decentralization, when it is common knowledge that it is not the same to coordinate with a national government as with a subnational government. It is necessary to coordinate and serve as a bridge between the health and education sectors. This coordination is the springboard for a well-developed intersectoral system.
- On some occasions, missions have entered a country through direct work with local or subnational governments and once they have demonstrated their results, the door is opened for coordination with the national authorities in the health and education sectors and for identifying new partners.
- Finally, although soil-transmitted helminth infections are a public health problem, it should be recalled that deworming has a significant impact not only on public health, but on the education sector and a country's development.

PANEL ON WATER, SANITATION, AND HYGIENE: CONCEPTS AND OPPORTUNITIES TO REDUCE PREVALENCE OF SOIL-TRANSMITTED HELMINTH INFECTIONS IN LATIN AMERICA AND THE CARIBBEAN

THE WASH STRATEGY IN INTEGRATED PROJECTS AGAINST NEGLECTED INFECTIOUS DISEASES²⁹

The neglected infectious diseases initiative for Latin America and the Caribbean began as a collaboration between the Inter-American Development Bank, the Sabin Vaccine Institute, the Global Network for Neglected Tropical Diseases, and PAHO. With a US \$2.5 million donation from the Gates Foundation, this initiative has implemented an integrated approach to combating these diseases and meeting the control and elimination targets established in PAHO Resolution PAHO CD49.R19 on the elimination of neglected diseases and other poverty-related infections.

The initiative is currently supporting nine projects in five countries of Latin America and the Caribbean through an integrated approach at three levels:

- **Integration between diseases:** instead of the ministries' traditional top-down approach, we support a shift in the intervention model that attacks several diseases at once.
- **Integration between sectors:** Health + Water and Sanitation and also collaborative projects between the health and education sectors
- **Integration between programs:** includes activities for the control and elimination of neglected diseases in the context of existing programs in the countries, such as school health weeks, vaccination campaigns, growth and development control, and so forth.

These demonstration projects are located in Bolivia, Brazil, Dominican Republic, Guatemala, Guyana, Haiti, Honduras, and Mexico. Three of the nine projects are presented below: Chiapas, in Mexico; Recife in Brazil; and Georgetown in Guyana.

Chiapas case study: Integration between diseases—Integration between the education and health sectors

The State of Chiapas is implementing the project with support from the FEMSA foundation. It focuses on integrated activities to combat neglected infectious diseases and boost capacity in the health system. Since the communities are geographically dispersed and difficult to reach in some areas, the project set up integrated brigades for the prevention and control of several diseases (trachoma, soil-transmitted helminth infection, Chagas disease, rabies, leishmaniasis, and onchocerciasis) in the state's priority municipalities, which are mostly indigenous. Most homes have dirt floors and limited access to adequate water and sanitation infrastructure.

The project served over 132,000 people at risk of contracting these diseases. Specifically, the project included the following activities:

- **Strengthening of the epidemiological surveillance system:** baseline assessments and monitoring and evaluation were conducted for six neglected diseases.
- **Intersectoral and interprogrammatic coordination** to improve impact on control of neglected diseases.

²⁹ Ana Lucía Muñoz, Specialist with the Health Team, Division of Social Protection and Health, IDB.

- **Health care:** individual and collective preventive and curative treatment to combat neglected infectious diseases.
- **Health worker training,** including laboratory technicians and community workers.
- Social mobilization, community participation, and health education based on the principles of the WASH strategy.

Culturally appropriate educational materials were designed for seven-year-old children, including coloring books with information on soil-transmitted helminths and healthy hygiene habits, since significant hygiene problems were detected in this area.

A workshop was delivered on face and hand washing to interrupt trachoma transmission (Chiapas is the only active focal point of trachoma in Mexico) and to reduce prevalence of soil-transmitted helminthes (Illustration 5). The baseline study showed prevalence rates of over 80% for soil-transmitted helminthes in some majority indigenous communities, such as San Juan Cancuc municipality.

Picture 1. Health education in Chiapas, Mexico, 2013



Source: Ignez Tristao, Inter-American Development Bank

Recife case study: Integration between diseases—Integration between the health and education sectors.

Recife, together with two bordering cities, is Brazil's fourth largest metropolitan area. It features high levels of inequality, including areas of extreme poverty where lymphatic filariasis transmission persists and there is a high prevalence of other neglected infectious diseases, particularly soil-transmitted helminth infections.

The objective of the project is to support measures leading to the interruption of lymphatic filariasis transmission—and the elimination of this disease nationally, since this is the last remaining focal point in the country—and to integrate activities for control of soil-transmitted helminth infections and other neglected infectious diseases.

In addition to active case-finding for schistosomiasis and leprosy, which clearly reflects the integration between diseases approach, the project works closely with the education sector.

The project also has an integrated component to reduce prevalence of soil-transmitted helminth infection that includes:

- Mass drug administration
- Health education activities for the prevention of soil-transmitted helminth infections based on the WASH strategy and with an emphasis on healthy habits and attention to hygiene, water and sanitation measures in the home.
- Educational activities related to the project's other three target diseases.

The project has been implemented in 40 public schools in the three target municipalities. It has benefited over 16,000 students directly and some 70,000 people indirectly, including the families and communities of these boys and girls, who are becoming agents of change and transmitting the health messages they have learned in school.

Table 10 shows the prevalence of soil-transmitted helminth infections in the three municipalities of the Recife project; all have high prevalence rates, albeit with significant differences between the schools studied.

Average prevalence in Recife is 26.9%, and as high as 55% at some schools.

In Olinda municipality, the average was 50.4%, and as high as 86% of students in some schools.

In Jaboatao, prevalence was lower, averaging 20%, and up to 24% in some areas.

PAHO's protocol for soil-transmitted helminth infections was followed in all cases and mass drug administration campaigns are being carried out in the schools. Since this is an integrated project, prevalence of schistosomiasis was also measured, and was 4% only in Jaboatão.

Table 3. Prevalence of soil-transmitted helminths according to the 2012 baseline study. Integrated Projects against NIDs

Municipality	Schools studied	Examinations conducted	General prevalence (variation)	Schistosomiasis
Recife	5	256	26.9% (13.6% to 55%)	-
Olinda	9	159	50.4% (26.0% to 86%)	
Jaboatão dos Guararapes	7	326	20.0% (15% to 24%)	4.0%
Total	21/40	741	32% (13.6% to 86%)	4.0%

Source: Integrated Projects against Neglected Infectious Diseases, Inter-American Development Bank, 2012

Guyana case study: Integration between the health and water and sanitation sectors

This is a project of the Division of Water and Sanitation of the Inter-American Development Bank to improve the sewer system in Georgetown, to which a health component was added to control soil-transmitted helminths and interrupt transmission of lymphatic filariasis.

Guyana has a population of 750,000 and this demonstration project benefits its capital, Georgetown, and the bordering area known as Region 4.

Georgetown has a swath of land below sea level and an inadequate sewerage system that causes flooding during the rainy season. Wastewater that is not absorbed by the drainage system leads to increases in the *Culex* mosquito population and higher prevalences of soil-transmitted helminths and lymphatic filariasis (LF).

- In 2001 the government mapped LF and found that an estimated 20% of the population in Region 4 was infected
- We conducted a new baseline study that showed a lower prevalence rate than we expected, ranging from 3% to 9%
- Prevalence will be measured again in 2014
- Important connection between poor sanitation in the region and prevalence of LF and soil-transmitted helminth infections

The project has a target beneficiary population of 320,000, which is the entire population of Region 4.

It has a budget allocation of US \$10 million, US \$300,000 of which are for the Neglected Infectious Diseases component, which is carried out by the Ministry of Health of Guyana, with technical support from PAHO.

Project components are:

- Rehabilitation of Georgetown's sewer system
- Reduction in prevalence of neglected diseases:
- Mass drug administration for 5 years, (DEC - Diethylcarbamazine + albendazole)
- School-based health education, including WASH activities, focused on healthy hygiene habits like hand washing and topics related to basic sanitation
- Social media campaign linked to soccer, in which a local soccer star played the lead role in TV and radio spots and public service announcements on lymphatic filariasis and soil-transmitted helminth infections and the mass drug administration campaign.

The main lessons learned from Guyana's model of integration between diseases and between sectors, with an emphasis on health education activities based on the recommendations of the WASH strategy were:

- By improving access to medications to treat filariasis and soil-transmitted helminths (DEC and albendazole), while simultaneously modifying hygiene habits through health education and by improving water and sanitation services, it is possible to control soil-transmitted helminth infections and eliminate other neglected diseases more efficiently and sustainably.
- Integrated interventions are more cost-effective (for example, the integration of filariasis and soil-transmitted helminths) and they act on the risk factors that lead to transmission of these diseases through collaboration with other sectors, especially the sanitation sector.

PERSPECTIVES AND OPPORTUNITIES FOR AN INTEGRATED APPROACH TO THE WASH STRATEGY AND NEGLECTED INFECTIOUS DISEASES³⁰

Water-related diseases

The first thing to consider is the environmental classification of water-related infections. Many of these diseases are classified by transmission route. Below they are grouped into categories related to the integration of water, sanitation, and hygiene (Table 11).

Chart 8. Environmental classification of water-related infections

CATEGORY		INFECTION	PATHOGEN
Fecal—oral (water-borne or related to improper hygiene)	Diarrheal diseases and dysenteries	Amebic dysenteries	P
		Balantidiasis	P
		Enteritis caused by <i>Campylobacter</i>	B
		Cholera	B
		Cryptosporidiosis	P
		Diarrhea caused by <i>E. coli</i>	B
		Giardiasis	P
		Diarrhea by rotavirus	V
		Salmonellosis	B
		Shigellosis (bacillary dysentery)	B
		Yersiniosis	B
		Enteric fevers	
		→ Typhoid	B
		→ Paratyphoid	B
		Poliomyelitis	V
		Hepatitis A/E	V
Leptospirosis	S		
Linked to improper hygiene	Skin and eye infections	Infectious cutaneous diseases	M
		Infectious ocular diseases	M
	Others	Typhus transmitted by lice	R
		Recurrent fever transmitted by lice	S
Water-based	Penetrate the skin	Schistosomiasis	H
		Guinea Worm	H
	Ingested	Clonorchiasis	H
		Diphyllobothriasis	H
		Fascioliasis	H
		Paragonimiasis	H
Water-related insect vectors	Bite near water	Sleeping sicknesses	P
		Filariasis	H
		Malaria	P
	Reproduce in the water	River blindness	H
		Mosquito-borne virus	
		→ Yellow fever	V
→ Dengue	V		

P: protozoario, B: bacteria, V: virus, S: spirochete, M: many, R: rickettsia, H: helminth.
Source: *Water and sanitation: Searching for new paradigms for the Americas*. PAHO. 2012

When environmental conditions change due to emergencies or disasters, or to global changes caused by climate change or variability, which also have an impact on the environment and hence on health, links are created that we can associate with the presence of certain types of diseases—diarrheal and vector-borne—among others. These connections are shown in the preceding table.

Another classification shows the potential health effects of exposure to environmental risk factors. These potential risks include several components: water, sanitation, and hygiene, and solid waste, excreta, and wastewater (Table 12).

³⁰ Henry Hernández, *Regional Advisor in Environmental Health in Emergencies and Disasters—PAHO*

Chart 9. Potential health effects of exposure to environmental risk factors

Health effects	Water and sanitation	Solid waste	Air pollution	Occupational hazards	Chemical hazards	Natural disasters	Global environmental changes
Acute respiratory infections			X	X	X		
Diarrheal diseases	X	X			X	X	
Vector-borne diseases	X	X			X	X	X
Chemical poisoning	X	X	X	X	X	X	X
Mental illness				X		X	
Cancer	X		X	X	X		X
Chronic respiratory diseases			X	X	X		X
Accident-related injuries and disabilities				X			X

Source: Integrated approaches to health and environment. Meeting of Health and Environment Ministers of the Americas. Mar del Plata, 2005.

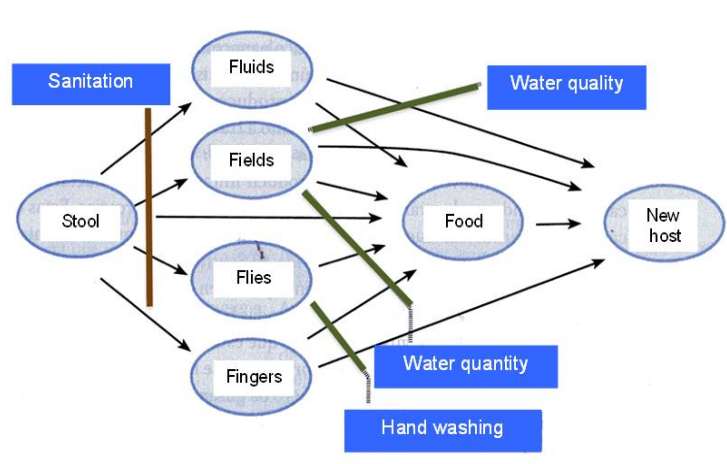
Just 10% of wastewater is treated in Latin America and the Caribbean, which means the risk to the public is high, especially among marginal-urban and rural populations. This is why it is important to think about conventional solutions which, one way or another, don't reach every sector. And our mission is especially to support marginal-urban and rural sectors.

Barriers and prevention strategies

It is important to clearly identify the barriers, as well as preventive strategies to interrupt fecal-oral transmission of many infectious diseases through the implementation of four categories of interventions: sanitation, water quality, access to water in the appropriate quantity, and hygiene, represented by the hand washing (Figure 21).

It is very important to have sufficient clarity in identifying the most appropriate interventions in sanitation. While appropriate coverage can be achieved through conventional technologies, we should be able to determine whether those same technologies apply to marginal-urban and rural areas and whether they will actually help interrupt the chain of transmission. The appropriateness of many solutions should be evaluated based on the social and cultural context, with a focus on gender and equity. And given their important role, this should be done jointly with the communities.

Figure 21. Prevention strategies to interrupt fecal-oral transmission of infectious diseases



Source: PAHO, 2012

Hygiene promotion

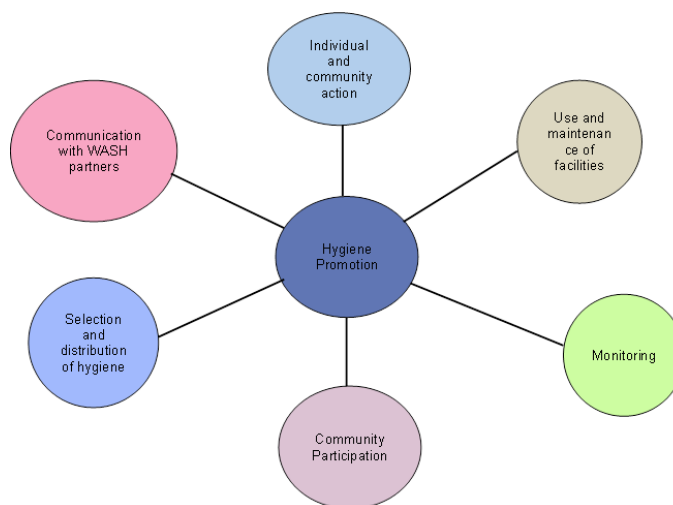
Technical and technological interventions do work, but unless they are accompanied by hygiene promotion that ensures the appropriate use of these different technologies, we really will not be able to have a significant impact. Hygiene promotion must go hand in hand with processes that facilitate and reinforce success, that strengthen the capacity of communities to influence and make decisions about the design of interventions that are really going to have an impact.

While there are experts on the issue, it is important to forge strong ties with local authorities. Many efforts related to the healthy spaces initiative stress community participation. In addition, it is essential to take advantage of local, regional, national, institutional, and community entities. We should take our proposals to them in order to mount a consensus-based effort that will have an impact.

Many of the essential components of hygiene promotion are related to social and environmental health determinants (Figure 22).

Understanding individual and community characteristics in a particular area is an inherent part of engaging the project's target community. They should express their opinions and fears before choosing the technical option, intervention, or tools that are should support them in improving their wellbeing and healthy quality of life. But this participation should be included consistently from design and maintenance to appropriate data collection that will support impact measurement. And it is important to have tools that strengthen the other components, particularly in the area of intersectoral action.

Figure 22. Components of Hygiene Promotion



Source: PAHO, 2013

Hygiene promotion is extremely important to complement to activities related to neglected infectious diseases. Hand washing, for example, reduces diarrheal diseases by 44%; sanitation contributes to a 32% reduction; and water quality at home to a nearly 35% reduction. Taken together, these integrated actions have a significant impact on health.

Healthy space initiatives

PAHO's Environmental Health area advocates that the health sector work with other sectors on local strategies such as Primary Environmental Care. Based on the same principles as Primary Health Care, it recognizes—in a preventive and participatory way—every human being's right to live in a healthy and adequate environment and to be informed about environmental risks to his or her health, well-being, and survival, and defines his or her responsibilities and duties with regard to the protection, conservation, and recovery of the environment and health (PAHO/WHO 1998).

The Healthy Spaces strategy also creates participatory social processes for risk reduction and for addressing protective factors for health. It is the springboard for initiatives like healthy schools and healthy housing, among others, that address different scenarios for working on healthy communities.

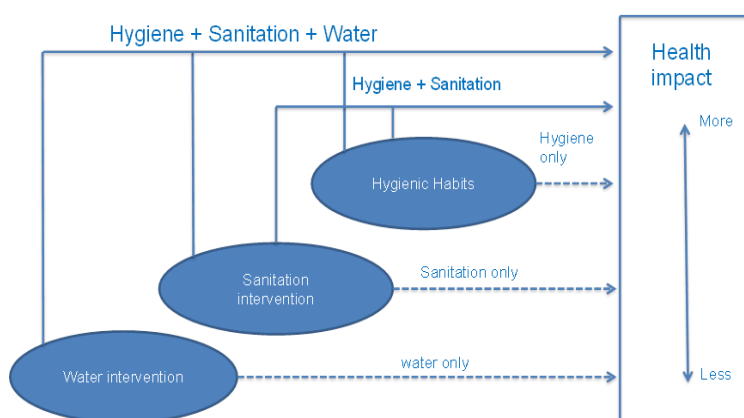
Health interventions should always take into account the following five criteria for ensuring equity and sustainability:

- *Disease prevention*: They should be suitable for destroying or isolating pathogens
- *Access*: They should be accessible to the poorest peoples of the world
- *Environmental protection*: They should prevent pollution, restore nutrients to the soil, and conserve valuable water sources
- *Acceptable*: They should be aesthetically inoffensive and respectful of cultural and social values
- *Simple*: They should be sufficiently simple and easy to maintain, considering the limitations related to local technical capabilities, the institutional framework, and economic resources

Health Impact Assessment

The World Health Organization and the Pan American Health Organization, through the Regional Technical Team on Water and Sanitation, have been promoting an integrated model for water, sanitation, and hygiene. As shown in Figure 23 integration can enhance the impact of water, sanitation, and hygiene interventions, changing and improving conditions essential to the health of communities.

Figure 23. Model of the Potential Health Impact of WASH Interventions



Source: World Health Organization: Combating waterborne disease at the household level. Geneva, 2007.

Ecohealth approach

The *ecohealth* approach identifies the environmental and social determinants of health so that we can understand their influence on health. This makes it possible to refocus community participation processes based on the evidence.

Finally, the water safety plans initiative addresses risks in every component of the supply system by minimizing water sources and reducing, eliminating pollution through water treatment (barriers), and preventing contamination during storage, distribution, and handling at the household level. It is a comprehensive approach to ensuring the safety of drinking water.

Challenges, opportunities, and guidance

- The crisis in water, sanitation, and hygiene should top the political agendas of the different sectors involved in well-being: health, environment, and so forth.
- Actions to achieve water, sanitation, and hygiene objectives should focus on supplying a sustainable service, rather than on infrastructure alone.
- Include a health impact assessment in integrated water management.
- Modernization of the drinking water and sanitation sector should emphasize improving levels of management and facilitating civil society participation.

- Regulation of services should take a comprehensive approach that incorporates aspects related to health protection.
- The greatest effort should focus on enforcement systems, environmental surveillance, and service quality certification.
- Treatment of wastewater should be promoted, given its negative impact on health and the environment.
- Dynamic programs to increase coverage in peri-urban and rural areas, through active consumer participation.
- A strategic approach to health on the part of the water and sanitation sector, so that health sector agencies have properly structured programs and trained resources to meet the needs for environmental health services.
- Strengthen the capacity of environmental health units within the ministries of health, with an intersectoral approach.
- Strengthen the participation of all sectors with some involvement in environment and health issues, clearly defining their roles and functions.
- Engage the community and social sectors.

“Water and sanitation is one of the primary drivers of public health. I often refer to it as “Health 101,” which means that once we can secure access to clean water and to adequate sanitation facilities for all people, irrespective of the difference in their living conditions, a huge battle against all kinds of diseases will be won.”

Dr. Lee Jong-wook, former Director-General, WHO (R.I.P.)

- Promote the development of low-cost technologies tailored to the needs in vulnerable areas.
- Scale up educational programs that stress the water – health – life relationship.
- Promote investment in and rehabilitation of water supply and sanitation infrastructure to improve the efficiency of systems and reactivate economic growth.
- Strengthen legislation by including health-related issues.
- Apply WHO Guides: on water quality, recreational waters, etc.

PANEL DISCUSSION ON WATER, SANITATION, AND HYGIENE: CONCEPTS AND OPPORTUNITIES TO REDUCE PREVALENCE OF SOIL-TRANSMITTED HELMINTH INFECTIONS IN LATIN AMERICA AND THE CARIBBEAN

This session offered the participating NGOs an opportunity to respond to the question below. The main points of consensus at the end of the session are summarized below.

What are the opportunities and challenges for control of soil-transmitted helminth infections by improving water quality and sanitation?

- There was a proposal to create a basic, standardized kit of interventions to improve sanitary infrastructure, not only in schools along with education and mass drug administration, but supported by infrastructure improvements undertaken in coordination with local authorities and the different sectors.
- It is necessary to identify and systematize the lessons learned and good practices that have emerged in the work the countries have been doing, as a springboard for new evidence-based work platforms.
- The progress and results of IDB projects were highlighted, and especially those of the Government of Guyana in Region 4. Improving the sewerage system is critical in a capital that has experienced significant population growth due to rural–urban economic migration. Interruption of LF transmission and control of the *Culex* mosquito are crucial, but it was also an opportunity to establish a baseline for prevalence and control of filariasis and soil-transmitted helminth infection through mass drug administration. The most difficult and complex aspects of this project are what make it even more valuable as a successful experience. One of the difficulties identified was coordination between the water and health sectors.
- As far as PAHO is concerned, all the opportunities and challenges mentioned at the end by Henry Hernández, but in particular, having integrated actions on water, sanitation and hygiene promotion.
- Strengthen contacts between donors and health ministries in order to have a sense of how health ministries can focus not only on water quality, but also on the control of other diseases.

IMPLEMENTATION OF INTEGRATED DEWORMING ACTIONS IN LATIN AMERICA AND THE CARIBBEAN: PLANS OF ACTION

GENERAL OVERVIEW OF REGIONAL GUIDELINES

Dr. Luis Carlos Ochoa summarized the Guidelines sponsored by the Pan American Health Organization.

He presented the objectives, the frame of reference, and the consequences of soil-transmitted helminth infections in children and pregnant women, as well as deworming as part of integrated actions for the control of soil-transmitted helminth infections, with all of its benefits for schoolchildren and the general public.

The content of his presentation is found on pages 25 to the 29 of this report.

PLANS OF ACTION OF THE PRIORITY COUNTRIES IN LATIN AMERICA AND THE CARIBBEAN

The profiles and plans of action that each country prepared at the workshop held on 13 - 15 May, based on the methodology and priority variables were presented.

These presentations are summarized in Table 6, on pages 44 – 49 of this report.

SUMMARY OF PROPOSALS FOR INTEGRATING EFFORTS TO IMPLEMENT, SCALE UP, AND SUSTAIN DEWORMING ACTIVITIES IN LATIN AMERICA AND THE CARIBBEAN, IN THE FRAMEWORK OF THE PLANS OF ACTION PROPOSED BY THE PRIORITY COUNTRIES

Methodology

During this session, the participating countries were divided into four groups, and the NGOs and other partners were also divided into four groups (Table 13). There were four meeting rooms were available, one for each group of countries, where they were joined by one of the groups of NGOs and other partners in order to meet each other, exchange contact information, and agree on activities based on the action plans that had been prepared and presented. Each meeting lasted an average 30 minutes, after which the NGOs and partners rotated to a different country group. In this way, the NGOs and partners were able to converse and share activities with all of the health ministry representatives.

Chart 10. Groups of country representatives of the Americas and of NGOs and partners present at the meeting

GROUPS OF COUNTRIES		GROUPS OF NGOs AND OTHER PARTNERS	
1	Belize, Guyana, Saint Lucia, Suriname	A	NGO: Catholic Medical Mission Board, Members: Canadian International Development Agency-CIDA, Children Without Worms-CWW (2), Sabin Vaccine Institute
2	Brazil, Colombia, Honduras, Venezuela	B	NGO: Healthy World Foundation, Global Health Partnership Initiative (INALSALUD); Members: Inter-American Development Bank-IDB, McGill University (2)
3	Dominican Republic, Ecuador, Mexico, Panama, Peru	C	NGO: Operation Blessing International, Save the Children, Vitamin Angels (2); Members: GlaxoSmithKline-GSK.
4	Bolivia, El Salvador, Guatemala, Nicaragua, Paraguay	D	NGO: INMED partnership for children, INMED Andes, Partners: Johnson & Johnson - J&J (3), Bernard van Leer Foundation

The main points, topics, observations and conclusions from the meetings between each group of countries and the NGOs and other partners are summarized below.

Group One, presented by Dr. Francis Monrey—Ministry of Health of Belize.

- The program should be a coordinated effort involving the ministries and all the relevant partners.
- It is important to make sure the process is implemented properly. Assign establishment of the baseline for each country the importance it deserves.
- Many countries need assistance for training.
- Soil-transmitted helminth infections are a problem that requires a multisectoral approach.
- The exercise of drafting profiles for action plans was important in terms of methodology and enabled those present to gain experience in outlining a future plan for the control of soil-transmitted helminth infections that will then be shaped in their countries.
- The presence of donors, NGOs, partners, and PAHO and WHO coordinators and their professional teams have contributed to the success of these meetings, in particular, in time management for participants.
- It would have been useful to have participants from the ministries of human development.
- A recommendation for the future is that the countries that are going to launch their programs or that are going to start to draft their action plans should take into account others NIDs, in order to obtain training support and undertake a complete evaluation of the process as it is being implemented.

Group Two, presented by Dr. Lucia León—Ministry of Health of Venezuela.

- We were unanimous in our view that the meeting with the NGOs and partners, which we called “the negotiating table,” was very useful and we congratulate PAHO on this initiative.
- Brazil, Colombia, and Venezuela will be working at the subnational level; in Honduras, the area of intervention will be national; and Brazil and Honduras have had very good participation as far as drug donations and have worked in conjunction with Johnson & Johnson and GSK.
- In the case of Colombia, there is a problem with the medication’s packaging; apparently there is a regulation that prohibits the entry of medications packaged in bottles, which could complicate donations requests.
- Venezuela also has a regulation on packaging, but is able to arrange for the entry of bottles, although blister packs would be preferable. The request would be through PAHO.
- As far as distribution of medications, Brazil recommends that the bottles come in quantities of 100 tablets rather than 200 tablets. They already discussed this with the suppliers, who said that it was difficult to change this.
- There are some difficulties associated with scaling up coverage to preschool age children, since some NGOs only deliver medications for schoolchildren.
- As far as technical assistance, both Brazil and Honduras have a good relationship with the Healthy World Foundation, through the Chagas Program; and Save the Children offers some technical assistance in those countries.
- Colombia and Venezuela were interested in adding technical assistance to their deworming programs.
- The most requested topic with regard to education, communication, and mobilization was on WASH strategies. All the countries were interested in these information strategies and some specially requested the experience working with schoolchildren and teachers, in order to standardize criteria; the need for support in native languages in some areas was also raised.

- Save the Children can contribute resources for mobilization and communication in remote areas; the others offered advocacy for resources.
- Venezuela noted that it works with allied countries and that it is difficult for it to work with NGOs at this time. It is interested however, and will convey the proposals and offers to a higher government level.
- The countries recommended that the NGOs report where they are working in each country and in what areas they are active, for future joint efforts.

Group Three, presented by Dr. Cecilia Paredes—Ministry of Health of Ecuador

- We should take advantage of and optimize the resources and benefits of assistance from the different stakeholders that stand ready to cooperate with us, since we share a common goal of reducing parasitosis in our population.
- Medication donation is a strength and a huge source of support for our countries.
- Since the presentations do not include suspensions for preschool children—and taking as a technical mandate what Dr. Ochoa said in his presentation to the effect that we do the best for children in the first two years—I think it is important to purchase the suspension in order to start deworming our little ones ages twelve months to two years. This is a commitment.
- Technical support from participating universities is useful for establishing a baseline that is sufficiently robust from the technical and scientific standpoints and can serve as a vehicle for continuing the activities.
- It is necessary to develop a manual or guidelines for those of our countries that are going to work on the control of soil-transmitted helminth infections. They will also be useful for ongoing monitoring and evaluation and for making adjustments in the deworming process.
- Support is needed for training the ministries of education and environment, the mayors, and in the territories where we are going to work, so that they take ownership of the health issue and devote more efforts to improving sanitary infrastructure.
- The countries welcome all of the donors' activities, as long as they are carried out through our respective PAHO representations and, obviously, have the endorsement of the ministries of public health.
- We would like to see whether PAHO/WHO could bring us together again in the not too distant future to present the plans that we had proposed and extract lessons from how much progress we have made in what we have proposed on paper today, and also how much progress we have made in improving the sanitary infrastructure in our countries.

Group Four, presented by Dr. Alexandra Portillo—Ministry of Health of El Salvador

- Support is required for monitoring and evaluation and preparing the baseline. Paraguay case: it has already carried out a deworming campaign, but has not estimated prevalence and it is requesting support to obtain a baseline on prevalence of soil-transmitted helminth infections.
- Medication donations are requested. Nicaragua case: they are going to deworm and there was poor information between the Ministry of Health and the NGOs about when the latter carry out deworming, in order to mount a single campaign between NGOs and Ministry of Health.
- PAHO has always helped organize deworming campaigns and also contributes to coordination. Nicaragua case: they request direct support from PAHO for their campaigns.
- Guatemala case: they request human resources support, since Guatemala is a large and needy country. It was suggested that they involve the population in the municipalities to help with the campaigns.

NGOs and Partners

- Save the Children said that the first step is to make sure their country offices are in touch with the people present at this meeting and requested the list in order to put them in touch. They are not promising resources, but what they will do is include deworming in their activities in the countries where they have programs and make sure that the work is coordinated with the ministries' plan of action.
- GSK found the four meetings with the groups of countries very interesting and enriching. They reiterated their commitment to the countries and invited those needing donations to contact the PAHO/WHO Representative Office in their country and let their country offices know, so that everyone is informed of their interest. They confirmed that the process in Geneva is very quick, using the channels and means established for this purpose.
- At one of the meetings, the countries raised the need for a workshop to standardize monitoring and evaluation and the process of establishing a baseline. PAHO is working on a frame of reference to standardize monitoring and evaluation of neglected infectious diseases in the region, including soil-transmitted helminth infections. WHO's experience structuring the monitoring and evaluation component developed for the region of Africa is being used as the basis for adapting the methodology for the Americas. The offer by Dr. Theresa Gyorkos of McGill University to provide training in the Region was very well received. Topics: baselines, sentinel surveillance, performance and impact indicators, etc.
- J&J is committed to donating albendazole for deworming and, of course, they invite all of the countries to submit their applications using the mechanisms presented at these meetings.
- A common theme was that several countries are a little reluctant to submit a plan and request technical assistance. A kit to facilitate processes and procedures will be useful in changing this attitude.
- Countries should establish, carefully and critically, processes and procedures to involve NGOs in the plan for the control of soil-transmitted helminth infections. Decide on a way to locate these organizations, present the initiative to them, and let them know that there are other NGOs working with local NGOs.
- The health authorities should have an in-depth understanding of import procedures, so that they can make arrangements with customs authorities to ensure that the entire effort does not come to a halt at customs due to ignorance, or lack of communication and mutual agreements.

CONCLUSIONS AND RECOMMENDATIONS FROM THE SESSION

CONCLUSIONS	RECOMMENDATIONS
<p>The 18 participating countries are interested in and committed to implementing, continuing, strengthening, and evaluating deworming activities with the following characteristics:</p> <p>Integrated into other public health activities, especially those for the control and elimination of NIDs, but also vaccination campaigns, for example, and integrated into a health determinants framework. Moreover, all the countries have expressed interest in integrating deworming activities with education and with the water, sanitation and hygiene component.</p> <p>Promote State policies to foster sustainable development of communities, which is our ultimate aim.</p>	<p>Conduct advocacy so that control of soil-transmitted helminth infections is regarded as a public health priority framed by the social determinants of health and integrated into each country's development plans, with an interprogram and intersectoral approach that ensures the sustainability of the activities.</p>
<p>Integration is an opportunity to strengthen health services. Integration into EPI or nutritional activities is a window of opportunity for deworming preschool age children, while integration with education and healthy schools is an opportunity for deworming school-age children.</p>	<p>Identify, adapt, and implement deworming alternatives in the framework of health sub-systems, based on the document we discussed: "Guidelines for the implementation of deworming activities"</p>
<p>Countries have made progress in implementing deworming through the health sector and, in some cases, in coordination with the education sector; However, coordination with other sectors involved in infrastructure, water, and sanitation, and with other partners still poses a significant challenge.</p>	<p>Proactively link and coordinate activities for the control of soil-transmitted helminth infections with other sectors and social stakeholders in each country, including NGOs, and United Nations and other international agencies, in order to optimize the available resources and build on their experiences.</p>
<p>Integration of deworming into other programs or sectoral and intersectoral activities is a very cost-effective intervention that requires a thorough and coordinated process for planning, resource mobilization, implementation, and monitoring and evaluation.</p>	<p>Each country should draft an annual action plan for the control of soil-transmitted helminths that reflects coordination and integrated planning and includes the components of information systems, supervision, monitoring, evaluation, and social mobilization.</p>
<p>Several countries in the region have been implementing deworming activities for soil-transmitted helminths for over five years, with coverage levels over 75%; however, impact assessment continues to be a challenge.</p>	<p>In countries that have ongoing deworming programs in place, evaluate impact in order to adjust interventions for the control of soil-transmitted helminth infections; this includes standardizing laboratory tests for quality control and the methodology for design, sampling, and so forth.</p>
<p>Some countries are accessing albendazole through PAHO/WHO and other countries have expressed an interest in accessing donations, including other population groups.</p>	<p>It is recommended that countries that access drug donations for school-age children allocate the resources saved to other activities to improve the program, such as monitoring and evaluation.</p> <p>Countries interested in accessing the medications should rely on the Operational plan for the control of soil-transmitted helminth infections, which describes planning, implementation, monitoring, evaluation and coverage reporting.</p> <p>For PAHO and partners like the Global Network for Neglected Tropical Diseases: conduct advocacy with the pharmaceutical industry so that they expand the donation to include other population groups, such as pre-school age children, women of childbearing age, adults, etc., and make liquid presentations available for children under five.</p> <p>For PAHO/WHO: disseminate the standardized process for requesting drug donations for the Region of the Americas.</p>

CONCLUSIONS	RECOMMENDATIONS
<p>Sustainability is a pillar that should be addressed in action plans for integrating activities for the control of soil-transmitted helminth infection.</p>	<p>Strengthen installed capacity in the priority countries to ensure the sustainability of activities for the control of soil-transmitted helminth infections in the medium and long terms.</p> <p>The participation of delegates from the Ministry of Education strengthened the joint analysis of integrated interventions for the control of soil-transmitted helminth infections in the priority countries. However, it is necessary to link delegates and ministries involved in access to water and sanitation for implementation of integrated activities. To this end, it is recommended that PAHO/WHO promote the participation of delegates from other ministries at workshops or regional meetings. Similarly, the countries are urged to convene the authorities responsible for water and sanitation, housing, and poverty reduction, among others, at the national and subnational levels to define specific actions in the framework of health determinants.</p>

GENERAL RECOMMENDATIONS

- PAHO's regional NID program should strengthen and expand coordination among its other regional programs in order to promote comprehensive technical cooperation for the countries from the Regional Technical Team on Water and Sanitation (ETRAS), based in Peru and at the disposal of the Americas, as well as the strategic fund correct name for medicines and critical supplies, immunization, nutrition, life cycle, etc.
- Implement and strengthen monitoring and evaluation of activities in all the countries, including baseline surveys, monitoring of performance indicators and evaluation of impact indicators to improve decision-making for the control of soil-transmitted helminth infections and for implementation of activities tailored to the epidemiological situation in each country.
- In addition to children under fifteen years, it is necessary to deworm other age groups such as pregnant women beginning in the second trimester, women of childbearing age, adults working in activities like agriculture and mining, among others, who are living in areas at risk of transmission of soil-transmitted helminth infection.
- Systematize the practical experiences in the region so that they can be disseminated and scaled up substantially in the countries.

DISCUSSION PANEL ON SUPPORT FROM NGOs AND PARTNERS

How can NGOs and other partners support national and regional efforts towards control of soil-transmitted helminth infections?

- This event brings to light a basic circumstance, namely the *formalization of informality*, since efforts have been more or less disorganized or lacking in what is required, and it is critical to formalize distribution and administration.
- The existence of NGOs is related to whether or not the countries need to carry out certain activities that are not very attractive to them and therefore, the NGOs are going to exist in that relationship. But the main thing we can do is open up our activities, be transparent in our actions, and coordinate directly with stakeholders in order to reach a strategic solution to the problems discussed.
- NGOs can also provide support in the area of advocacy at different population levels and with policy-makers, because these are truly neglected diseases, because there is a lack of awareness of the problem these diseases pose for public health and, in general, for the country's productivity.
- Delivery of medications requires a channel that could be the health services or schools, but there are many remote rural areas in many countries and NGOs have better access to those places.

- Contribute experiences in education, social determinants, the technical aspects of monitoring and evaluation, the development of implementation plans, among others. Also, there could be some support within these organizations.
- It is necessary to share the countries' results and experiences. There are excellent experiences from Mexico and Brazil, as well as from other countries. Other countries could apply those experiences in their own contexts and this would also serve as a form of advocacy to promote the control of soil-transmitted helminth infections.

What would be the next steps?

- It is important for we NGOs to understand the methodology being used in national plans in terms of the gaps; NGOs identify these gaps to determine the needs for collaboration, as is the case in Honduras.
- Some countries, such as the Dominican Republic, Honduras, Mexico, and Nicaragua, have had very good experiences with cooperation between countries. And some countries are just getting started and they learn from the experiences of other countries in order to improve their activities and develop their plans.
- Take an integrated approach in each country, involving all the NGOs, partners and allies available, local governments, the community, in order to have a greater impact and achieve better results.
- Locally, each national program should have contact with and support from the local PAHO office in order to formalize and develop the plan for the control of soil-transmitted helminth infections that was proposed here. The advantage of doing this is that, in any given moment, PAHO can provide support in involving NGOs or any other key partner in a position to assist in the process of drafting the plan.
- Academia will contribute by supporting research on monitoring, evaluation, and so forth. It can also facilitate dissemination of research findings and other documents on this issue.
- Review each country's plans for NID. Donors are not only supporting the area of medications delivery, but also WASH and other processes. These are multipurpose activities that are directed toward and have an influence on other diseases like trachoma.
- Involve schools that educate human talent in the health sector. They are the ones who are going to check whether a child over age one has gone more than six months without being dewormed and who will do everything in their power to make sure that child does not go home without having received his or her antiparasitic; this will help improve coverage. Another proven fact is that 60% of deaths that occur in children under five have to do directly or are associated with malnutrition, and we are aware of the relationship between malnutrition and helminthiasis.
- Perhaps the NGOs could organize regional meetings on topics such as social development, etc. Perhaps, with enough advance notice, we can plan, as PAHO and with some of the countries, and present our work at the meetings of international NGOs. At least two or more of them will hold a meeting every year, where the work could be presented and another window opened for dialogue with potential partners.
- It would be very important for countries to have an inventory or map of the local NGOs working in their territory, since it would support international NGOs that are interested in interacting with local ones able to carry out deworming activities in remote areas.
- Invite the NGOs to systematize their experiences working in the territories. There are experiences with dispersed, hard-to-reach populations. There are successful experiences of NGOs working with indigenous populations, despite the cultural barriers to reaching them normally or easily with this type of intervention.

CONCLUSIONS AND RECOMMENDATIONS FROM THE MEETING

CONCLUSIONS	RECOMMENDATIONS	OBSERVATIONS
<p>The ministries of health, NGOs, FBOs, and partners are interested in coordinating and implementing integrated actions for the control of soil-transmitted helminth infections.</p> <p>NGOs, FBOs, and partners confirmed their interest in participating in integrated actions for the control of soil-transmitted helminth infections, not only through the donation and distribution of medications, but also in terms of strengthening national and local capability, and providing support for training, technical assistance, monitoring and evaluation.</p>	<p>The ministries of health should identify the lead area or group for the control of soil-transmitted helminth infections (and other NIDs) in order to facilitate dialogue and coordination with NGOs, FBOs, and other partners, as part of strengthening its steering role.</p> <p>PAHO/WHO can serve as a catalyst for dialogue and coordination with NGOs, FBOs, and partners.</p> <p>Map where NGOs, FBOs, and partners are implementing activities for the control of soil-transmitted helminth infection in the countries (who they are, where they are, structure and resources, and their activities), making use of existing national agencies that maintain registries of NGOs, FBOs, and partners.</p>	
<p>There are weaknesses in information mechanisms and flows on deworming and control of soil-transmitted helminth infections in the countries (donation of medications, deworming coverage reports, monitoring and evaluation, and so forth).</p>	<p>The ministries of health in each country should establish data flows based on their existing information systems. This includes reports on activities carried out by other ministries (e.g. education), NGOs, FBOs, and partners.</p> <p>The ministries of health should strengthen their reporting systems for activities to control soil-transmitted helminth infections (coverage, monitoring and evaluation) in order to improve the quality and timeliness of annual reporting at the regional level</p> <p>Identify and analyze information from different sources and from the databases of institutions and organizations involved in the chain of actions to control soil-transmitted helminth infections, in order to strengthen decision-making.</p> <p>Explore the use of new technologies to improve the timeliness and quality of data reporting (mobile telephony, web-based reporting systems, etc.).</p>	<p>The Ministry of Health of Ecuador will be directly responsible for data collection, which means that PAHO will be receiving official information from that Ministry.</p> <p>Information on health determinants must be included. As a conclusion or to complement this it could be said that: "There are weaknesses in information mechanisms and flows on social determinants"</p>

CONCLUSIONS	RECOMMENDATIONS	OBSERVATIONS
<p>There are regional gaps in monitoring and evaluation of activities to control soil-transmitted helminth infections, including impact assessments of interventions in water, sanitation, and hygiene.</p>	<p>The ministries of health should include monitoring and evaluation of process, performance, and impact indicators in their activities for the control of soil-transmitted helminth infections. These activities should involve other ministries, organizations, universities, research centers, and institutions linked to the control of soil-transmitted helminth infections.</p> <p>PAHO/WHO, jointly with the ministries of health, ministries responsible for water, sanitation, and hygiene, and partners, should support monitoring and impact assessments of integrated actions for the control of soil-transmitted helminth infections (including the economic evaluation of the integrated WASH package).</p> <p>Monitoring and evaluation results should be used at the national and subnational levels to inform decision-making and modify the interventions</p> <p>PAHO/WHO, jointly with the partners, should design and deliver a regional workshop on monitoring and evaluation.</p>	<p>On the monitoring and evaluation workshop, situate it so that it takes place as soon as possible, because this is what will tell us where to carry out treatment and we cannot wait very long.</p> <p>There is some urgency associated with this and Mexico, the Dominican Republic, and Nicaragua, for example, are very interested in conducting an impact assessment in their deworming plans, which have been ongoing for at least five years or more.</p>
<p>Protocols, guides, and guidelines produced by PAHO/WHO and partners and allies are available or are currently being developed for the control of soil-transmitted helminth infections and Neglected Infectious Diseases, including tools on water, sanitation, and hygiene for the prevention and control of neglected infectious diseases.</p>	<p>Working with the partners, PAHO/WHO should compile available documents (on health, water, sanitation, and hygiene) as a toolkit and make it available to the countries and regional partners.</p> <p>Map and systematize experiences in the countries, in order to learn about and share lessons learned and good practices in WASH and/or NIDs.</p>	<p>Some of these tools have already been developed and should be available to the countries. The reality is that many countries of Latin America and the Caribbean have different situations—peri-urban poverty belts, scattered and hard to reach rural areas, and a significant ethnic component, which means that these tools will have to be adopted and adapted.</p>
<p>A wide variety of educational materials on the control of soil-transmitted helminth infections are available from the ministries of health, NGOs, FBOs, and partners.</p>	<p>PAHO/WHO, in collaboration with the partners, should compile existing educational materials and make them available to the countries, NGOs, FBOs, and the partners who request them.</p> <p>Scale up educational programs that emphasize the relationship between health and water, sanitation, and hygiene.</p>	<p>It is necessary to strengthen the sector in health communication and education. Most of the people in contact with the communities are health workers and they have virtually no training in health communication. Our communication is usually vertical, paternalistic, and chastising.</p> <p>Colombia has committed to making progress in the social and cultural adaptation of public health programs with ethnic groups. The indigenous population in Colombia accounts for 2.5% of the total population. It must also pursue sociocultural adaptation with the Afro-Colombian population, which accounts for approximately 10% of the population. We would very much like to study this topic specifically, with Brazil for example. We would like to get to know them better and share experiences.</p>

CONCLUSIONS	RECOMMENDATIONS	OBSERVATIONS
<p>Some countries are receiving drug donations for school-age children through PAHO/WHO. They are relying on other alternatives (local purchase, donations from other partners, etc.) for other age groups such as preschool age children.</p>	<p>PAHO/WHO should advocate expanding the donation of medications to other age groups, in order to unify and facilitate programming and implementation of activities in the countries.</p>	<p>Have the ability to accurately pinpoint health determinants in each country. In addition to the baseline for prevalence of soil-transmitted helminths, there should be a baseline for health determinants. This would allow us to include priorities, stratifications, integration, timing, surveillance, monitoring, financing, advocacy, commitment, realities, responsibilities, adaptations, buy-in, policy, languages, etc.</p> <p>NGOs mentioned: "If you want to propose that we help you in some way, you have to tell us exactly what it is you want, where you want it, and with what characteristics you want it."</p>

General comments and recommendations

- One of the donors' concerns had to do with antiparasitics that ministries of health were going to request from PAHO, but the administrative timing in the countries was not always quick enough, which jeopardizes drug donations for campaigns. So it was a concern and I did not see it reflected. And I believe that it is important, how this is going to get to the countries; the fact that countries, through their ministry of health or other ministries, submit the request in advance and try to meet the requirements as quickly as possible, to avoid a shortage occurring at some point.
- A reasonable time to request the donation is six months before the medication is needed, taking into account the administrative and bureaucratic delays in the ministries' internal approval process prior to submitting the request. Because once the request goes to PAHO/WHO, it takes more or less a week to respond, and then it is going to take six months for the medication to actually get there. The recommendation is to plan six months ahead.
- It is important to mention the availability of Kato-Katz kits for establishing baselines and sentinel sites for monitoring and evaluation. PAHO/WHO can donate Kato-Katz kits to countries that need it; in fact we have donated it to: the Dominican Republic, El Salvador, and Honduras. One kit can cover 400 stool samples.
- As far as administering the donations, it might be useful to have a general recommendation from the secretariats, so that the countries understand the regulations governing the donated products. If a problem is detected, they should try to resolve it now, before the products arrive at the port.
- The quality of the data that each country reports for its own coverage statistics and for the region. I have heard the idea mentioned of adding deworming during individual consultations to coverage data. Individual deworming has an undeniable benefit; but when we refer to coverage, we are talking about mass deworming, which has an impact on the public health of the target community. In this sense, individual data should not be included in coverage figures.
- Universities are the bridge between public health policy and their students, and they equip students with updated theoretical and practical information to promote the change of vision that is needed in public health and public health policy.

Closing session³¹

We have accomplished a lot in the past two days and we have reached the end of the meeting. Much lies ahead, however, in order to continue this effort with the ministries of health, the partners, NGOs, universities, and other colleagues.

On behalf of the PAHO/WHO regional team on Neglected Infectious Diseases, we express our deepest gratitude to the Minister of Health and Social Protection of Colombia, Dr. Alejandro Gaviria, and to the Vice-Minister of Health, Dr. Fernando Ruíz Gómez, and his management team.

To all of the delegates of the ministries of health and partners, NGOs, universities and foundations for your participation and especially for your enthusiasm.

We are grateful to the representatives of the ministries of education of the countries that participated in the sessions prior to this meeting.

Also to our partners in the organization of this meeting and in the work of controlling soil-transmitted helminth infections: the Network on Neglected Tropical Diseases, the NGO Children Without Worms, and CIDA/Canada.

We are also very grateful to our colleague from WHO's Department of Control of Neglected Tropical Diseases, Dr. Antonio Montresor; and to PAHO Colombia for all its logistical support for hosting our work and the preparations.

We owe a debt of gratitude to the regional advisers who participated actively in this meeting and to our focal points in the PAHO country office.

We are grateful to Dr. Luis Carlos Ochoa for his work on the guidelines, which was the centerpiece of this meeting and the workshop held from Monday to Wednesday of this week.

And to Ms. Zoraida Sandoval for her work and logistical support, Dr. Celsa Sampson for her collaboration and observations, and our assistants, Ms. Sonia Ortiz and Ms. María Nazario.

And finally, we are grateful to the entire regional team for Neglected Infectious Diseases, and especially epidemiologist Dr. Martha Saboyá.

I want to personally express my gratitude to all of those present for the energy, interest and work you put into the preparations for this meeting during the past three days.

It was impressive to see all of your dedication and interest, the opportunities created. Our work here over the past two days was truly for the boys, girls, and women. And let us always keep in mind that they are the true focus of our public health efforts.

Thank you very much!

³¹ Steven Ault –Advisor to the Neglected Infectious Diseases Program, Pan American Health Organization

Participants at the Workshop for Training on Regional Guidance for Implementation of Integrated Deworming Actions–Bogotá, 13 - 15 May 2013 (Photo: F. Hernández)



Participants at the Meeting of Ministries of Health, NGOs, and Partners: Intensifying Integrated Efforts for Control of Soil-transmitted Helminthiases in the Region of the Americas: Working Together for a Common Goal. Bogotá, 16-17 May 2013 (Photo: F. Hernández)



Title Page Photo: Children in Santa Rosa, Peru, on the Colombian border (Courtesy of R. Restrepo—2010)