Short Report: Contributions of Non-Governmental Organizations to WHO Targets for Control of Soil-Transmitted Helminthiases

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Abstract. Soil-transmitted helminthiases (STH) may affect up to 1 billion children globally. The World Health Organization (WHO) recommends regular preventive chemotherapy for at-risk individuals. The WHO Preventive Chemotherapy (PCT) Databank tracks annual treatments reported by national Ministries of Health (MOHs) to evaluate progress to coverage goals. Non-governmental organizations (NGOs) deliver STH treatments; the extent to which they are included in MOH reports to the WHO is unclear. The Global NGO Deworming Inventory solicited treatment reports from NGOs to compare with the PCT Databank. In 2010, NGOs delivered 65.4 million STH treatments, which is an estimated 25.1% of the total delivered. Of these treatments, 23.3 million (35.6%) were not reported to the WHO; 22.3 million (95.7%) were from countries that had not submitted STH treatment reports to the WHO. Reporting from NGOs to MOHs and from MOHs to the WHO should be strengthened to ensure that progress to WHO treatment goals is monitored with better completeness and assessed accurately.

BACKGROUND

Soil-transmitted helminthiases (STH) are diseases caused by infection with parasitic worms, including *Ascaris lumbricoides*, *Trichuris trichiura*, *Necator americanus*, and *Ancylostoma duodenale*. Infection results from ingestion of eggs or contact with fecally contaminated soil and occurs primarily in areas with poor sanitation. Globally, it is estimated that almost 1 billion children are infected or at risk of infection with the parasites that cause STH.¹

Periodic deworming of all children in STH-endemic areas (i.e., preventive chemotherapy) is a cost-effective strategy to reduce STH-related morbidity.^{2,3} The World Health Organization (WHO) has recommended annual preventive chemotherapy for all children ages 1–4 years (pre-school-aged children) and 5–14 years (school-aged children) who are at risk for STH.⁴ In 2010, the estimated at-risk population was 275.1 million pre-school-aged children and 614.7 million school-aged children.¹ In 2001, the 54th World Health Assembly set a target of reaching at least 75% of all at-risk school-aged children with preventive chemotherapy at least one time per year,⁵ a target that was reaffirmed by the 2012 WHO strategic plan for STH control.⁴ For 2010, the 75% target equated to 461 million school-aged children. To track progress to treatment objectives, the WHO Preventive Chemotherapy (PCT) Databank⁶ compiles annual deworming treatment data reported by national Ministries of Health. Ministry of Health reports to the PCT Databank may include deworming treatments delivered by non-governmental organizations (NGOs) as well as treatments delivered as part of national child health programs, such as the Expanded Program on Immunization. In many countries, NGOs provide STH treatment to at-risk populations. The extent to which these treatments are reported to the Ministries of Health is unknown.

To assess the magnitude of this potential gap in assessing progress to treatment targets, the WHO Global Working Group on Access to Assured-Quality Essential Medicines for Neglected Tropical Diseases (WGA) requested Children With-

out Worms (CWW) to conduct an inventory of NGOs involved in community and/or school-based deworming activities.

METHODS

In total, 120 NGOs were identified through existing contacts and a web-based search as possibly being involved in STH control. NGOs were contacted by e-mail and telephone multiple times between June and December of 2011 to request completion of an Excel-based reporting form on STH treatments. Data included country, district, population treated, drug(s) used, number of treatments, and number of treatment rounds during the calendar year 2010. CWW reviewed the data submitted by NGOs for completeness and where necessary, contacted them for clarification before forwarding the data to the WHO. The PCT Databank administrator reviewed treatments reported through the inventory and compared them with treatment reports that had already been submitted to the PCT Databank by Ministries of Health and WHO regional offices. Analysis was restricted to actual treatments reported; reports on numbers of drugs that were donated to other organizations rather than delivered directly as treatments to communities were excluded (Figure 1). The analysis was further restricted to treatments for STH using albendazole or mebendazole alone (i.e., not combined with another drug for treatment of schistosomiasis or lymphatic filariasis) (Figure 1). Thus, treatments delivered as part of the Program to Eliminate Lymphatic Filariasis (PELF) or integrated programs to treat both STH and schistosomiasis were excluded.

RESULTS

Of 120 NGOs surveyed, 20 (16.7%) NGOs provided data for 2010. Reports from 14 NGOs met the criteria of reported treatments with albendazole or mebendazole not combined with another drug and were included in the final analysis (Figure 1).

These 14 NGOs reported 65.4 million STH treatments in 36 countries during 2010. Of these treatments, 23.3 million treatments (35.6%) had not been reported previously to WHO for inclusion in the PCT Databank (i.e., they were

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FIGURE 1. Inclusion flowchart for data received through the 2010 inventory. DEC = diethylcarbamazine.

identified only through the inventory). These treatments included 7.2 million (30.9%) treatments to pre-school-aged children and 16.1 million (69.1%) treatments to school-aged children (Table 1). When added to the PCT Databank, the total number of STH treatments in the PCT Databank was 260.7 million, which is considered, for the purposes of this analysis, as the total number of STH treatments reported in 2010. Thus, NGOs delivered 25.1% (65.4 million) of reported STH treatments in 2010. The 23.3 million previously unreported treatments represent 8.9% of the total global record of treatments for 2010.

Of 23.3 million treatments identified only through the inventory, 22.3 million (95.7%) treatments were from 14 countries with Ministries of Health that did not submit information on STH treatments for inclusion in the PCT Databank for 2010. The remaining 1 million treatments (1.5% of all NGO-delivered treatments reported to the inventory and 4.3% of

those treatments that had not been previously reported to the WHO) were from countries with Ministries of Health that submitted 2010 STH treatment reports to the WHO for inclusion in the PCT Databank. Ministries of Health did not attribute treatments to specific NGOs in their reports; rather, NGO-delivered treatments were identified by comparing the districts where treatments occurred and the number of treatments reported by Ministries of Health with those treatments reported to the inventory by NGOs. Therefore, these 1 million treatments were considered non-duplicative of treatments reported by Ministries of Health.

The number of STH treatments delivered by NGOs varied considerably by region, and the proportion of treatments that was identified through the inventory that was previously unreported to the WHO PCT Databank also varied (Table 2). The African region reported 40.1 million treatments to the inventory (61.3% of the total number of treatments reported

TABLE 1
2010 NGO inventory results

STH treatments	Children (all ages)	School-aged children	Pre-school-aged children
Number (millions) of NGO-delivered treatments reported to inventory	65.4	46.9	18.5
Number (millions) of NGO-delivered treatments reported to inventory but not reported by Ministries of Health to the WHO	23.3 (35.6%)	16.1 (34.3%)	7.2 (38.9%)
Number (millions) of NGO-delivered treatments reported to inventory from countries from which Ministries of Health provided no STH reports to the WHO	22.3 (95.7%)	15.6 (96.9%)	6.7 (93.1%)
Number (millions) of NGO-delivered treatments reported to the inventory from countries from which Ministries of Health reported STH treatments to the WHO—identified by cross-check of Ministry of Health and inventory reports	1.0 (4.3%)	0.5 (3.1%)	0.5 (6.9%)
Total number (millions) of 2010 PCT Databank treatments (including treatments identified through the inventory)	260.7	112.8	147.9
Number (millions) of all treatments included in the PCT Databank that were delivered by NGOs and reported to inventory	65.4 (25.1%)	46.9 (41.6%)	18.5 (12.5%)
Number (millions) of PCT Databank treatments that were identified solely by the NGO inventory	23.3 (8.9%)	16.1 (14.3%)	7.2 (4.9%)

TABLE 2
Treatments of pre-school-aged and school-aged children for STH by region

Region	Total number (millions) of treatments reported to the inventory	Total number (millions) of treatments reported to the WHO 2010 PCT Databank	Number (millions) of treatments identified by the inventory previously unreported to the WHO PCT Databank
Africa	40.1	102.2	11.5 (11.3%)
Americas	5.9	41.8	2.7 (6.5%)
Eastern Mediterranean	1.2	20.1	0
European	0	1.9	0
Southeast Asia	8.9	56.2	8.2 (14.6%)
Western Pacific	9.3	38.5	0.9 (2.3%)
Totals	65.4	260.7	23.3 (8.9%)

Data from the 2010 NGO deworming inventory are compared with those data reported to the WHO PCT Databank.

to the inventory). Southeast Asia had the highest percentage of treatments identified by the inventory that were previously unreported to the WHO PCT Databank (14.6%) compared with 11.3% for Africa, 6.5% for the Americas, and 2.3% for the Western Pacific.

DISCUSSION

The NGO deworming inventory was intended to improve completeness of global coverage data compiled by the WHO, quantify the contribution of NGOs to preventive chemotherapy for STH, and determine the extent to which NGO-delivered preventive chemotherapy is included in official WHO treatment figures. The data suggest that NGOs delivered at least 65.4 million albendazole or mebendazole treatments for STH to school-aged and pre-school-aged children in 2010—approximately 25.1% of treatments delivered globally for STH alone.

The inventory was also intended to quantify the suspected gap in STH treatment reporting between NGOs and Ministries of Health. Of the estimated 65.4 million treatments delivered by NGOs, 64.4% of treatments were reported to national Ministries of Health, and through the Ministries of Health, they were reported to the WHO for inclusion in the PCT Databank. The extent of unreported treatment by NGOs accounts for a relatively small proportion (8.9%) of the total number of 2010 treatments included in the PCT Databank.

However, the inventory revealed a significant reporting gap between Ministries of Health and the WHO. Of 23.3 million treatments reported to the inventory but not reported to the WHO, 95.7% came from countries in which the Ministries of Health reported no STH treatments to the WHO in 2010. It is unclear whether inadequate reporting mechanisms and processes between Ministries of Health and the WHO contributed to this gap or whether Ministries of Health were not informed of STH treatments being delivered by NGOs. In cases where NGOs reported treatments to the inventory but Ministries of Health had not submitted the same information to the WHO, we were unable to systematically assess whether Ministries of Health had received treatment reports from the implementing NGOs. Subsequent follow-up suggests that Ministries of Health received these reports in some cases but not other cases.

The inventory had significant limitations. Although extensive efforts were made to identify all NGOs engaged in deworming, many small groups were likely missed. Communication and outreach were primarily conducted in English; therefore, non-Anglophone NGOs may have been excluded from participating. Anecdotally, deworming is done by many small NGOs on an ad hoc, intermittent, or geographically limited basis, and it

is often uncoordinated with government programs. A comprehensive list of such groups with a description of their activities is not available. Furthermore, despite repeated reminders, the response rate among 120 NGOs that were considered potentially involved in deworming was low.

We excluded treatments for STH given combined with other drugs for lymphatic filariasis or schistosomiasis from the analysis, because the availability of these other drugs (ivermectin, diethylcarbamazine, and praziquantel) is more limited outside government sources than albendazole and mebendazole. Thus, NGO partners involved in integrated treatment delivery are better known. Based on the PCT Databank, 21.6% of pre-school-aged children and 54.5% of school-aged children treated for STH received albendazole combined with other drugs for lymphatic filariasis in 2010.⁶ Thus, a substantial proportion of treatment of STH is currently being delivered as part of integrated preventive chemotherapy for neglected tropical diseases (NTDs)—much of it by NGOs.

Two significant changes in STH control may effectively shift NGO roles from independently purchasing and distributing deworming drugs to supporting national STH control programs led and coordinated by Ministries of Health and/or Education. First, the donations of Vermox (mebendazole) and albendazole from Johnson & Johnson and GlaxoSmithKline, respectively, have increased dramatically during the past 2 years; 600 million doses per year are pledged through 2020.⁷ These donations are made free of charge to national governments. Thus, purchase of deworming treatments for school-aged children is, for all practical purposes, no longer necessary. Second, accounting rules for valuation of donated drugs that are purchased and supplied by NGOs have changed, making it less advantageous for NGOs.⁸

As part of renewed efforts to accelerate expansion of preventive chemotherapy, the WHO facilitates the global supply of donated albendazole (400 mg) to national lymphatic filariasis elimination programs and national soil-transmitted helminth control programs.⁹ The WHO, in collaboration with NTD partners, has developed a joint mechanism and a set of standardized forms to facilitate the process of application, review, and reporting as well as improve coordination and integration among different programs and departments at national levels.¹⁰ Such changes should lead to increased global coordination and more fully integrated deworming by NGOs into national NTD control programs led by Ministries of Health at the country level.

Efforts to delineate and address gaps in reporting of STH treatments are ongoing. Although a comprehensive review of whether the NGOs that reported unique treatments to the inventory had or had not reported these treatments to Ministries of Health, informal conversations with several

NGOs and Ministries of Health indicate that, in general, not all NGOs report STH treatments to Ministries of Health. This finding may be especially true for small or foreign-based NGOs, but it is likely not limited to them. Factors contributing to this reporting gap likely include lack of NGO coordination with Ministries of Health on activities, lack of awareness among NGOs that reporting is required, and lack of resources available at the Ministries of Health to solicit, compile, and coordinate reporting of STH treatments. Furthermore, not all Ministries of Health may be aware of the need to report STH treatments to WHO country offices for subsequent transmission to WHO regions and headquarters in Geneva.

Improvement of reporting at all levels is needed to strengthen the accuracy of the tracking of global STH treatments by the WHO, and NGOs have a key role to play in these efforts. More timely and complete reporting of NGO activities at a national level can help forge stronger linkages between NGOs and governments. The sharing of information facilitated by the use of joint information management tools for requesting and reporting medicines used by national control programs may also result in better coordination among NGOs within countries. Furthermore, improved reporting of treatments for STH from NGOs to Ministries of Health as well as from Ministries of Health to the WHO will improve the quality of information being used by all stakeholders to track global progress to annual STH treatment objectives at all levels.

Received May 22, 2013. Accepted for publication September 22, 2013.

Published online October 28, 2013.

Acknowledgments: The authors thank the non-governmental organizations (NGOs) that contributed their data to the inventory as well as individuals who notified and encouraged other NGOs to participate. They also thank the regional offices of the World Health Organization, particularly the Pan American Health Organization for encouraging NGO reports to the inventory, and Ministries of Health and Education for providing reports to the Preventive Chemotherapy Databank.

Financial support: Children Without Worms received funding for this project from Johnson & Johnson Services, Inc.

Disclaimer: The authors disclose that no conflict of interest exists with the funding source.

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