10 A strong foundation: Revising Cambodia's National School Health Curriculum to prevent and control intestinal worms

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Context

About 400 million children around the world have intestinal worms that are transmitted through soil (WHO, 2009). Found widely in tropical and subtropical areas, these worms – including roundworms, whipworms and hookworms – cause malnutrition and make children more likely to get other serious infections. Intestinal worm infections stunt children's growth when their bodies are developing. This can lead to slower mental development, reduced school attendance and performance, and later, to decreased productivity as adults – all of which continue the cycle of poverty. In severe cases, soil-transmitted worm infections can lead to death.

This case study describes a partnership to develop and test a primary school curriculum in Cambodia that will increase knowledge of soil-transmitted worms and promote behaviours that will help reduce transmission.

In 2004, Cambodia became the first country to begin providing 75% of school-age children with regular anti-worm treatment, thus reaching the World Health Organization's 2010 target six years ahead of schedule. The drugs reach nearly 2.5 million children across Cambodia's 24 provinces through a school-based de-worming program in which thousands of teachers participated. The program was supported by the WHO, UNICEF and others. Before the anti-worm treatment, about half of all children were infected with intestinal worms in all provinces of Cambodia.

Prevention is vital to maintain the gains made with de-worming campaigns. This extensive drug distribution program is complemented by school health programs. However, the current national primary school curriculum on health and hygiene, developed by the Ministry of Education, Youth and Sport (MoEYS), deals with soil-transmitted worms only indirectly

Practices that prevent and control intestinal worms

- Washing hands after defecating
- Washing hands with soap before preparing food
- Washing vegetables well before eating
- Eating well-cooked food
- Drinking boiled or filtered water
- Wearing shoes
- Not sharing clothes
- Cutting nails regularly
- Playing in clean areas
- Taking de-worming tablets

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Sanitation Coverage:		Water Coverage:	
Rural	Urban	Rural	Urban
18%	67%	56%	81%

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through such topics as handwashing, drinking clean water, using a latrine and causes of diarrhoea and other common illnesses. Specific instruction is extremely limited.

Overall, the outreach and nature of all Cambodia's projects to control intestinal worms are not well understood, even by those working in the field. Further, given the country's limited resources for school health programming, improved coordination is needed among the many agencies working in the field.

Children at Poek Ho (Waterfall) school in Kandal province, Cambodia who will learn to prevent soil-transmitted helminth infections (STH) through the new school health curriculum

CHILDREN WITHOUT WORMS

The project

Children Without Worms (CWW), a partnership between the Task Force for Global Health and Johnson & Johnson, has joined with Helen Keller International – Cambodia, the Ministry of Health, and the Department of School Health within the MoEYS to assess existing school health programs and improve the curriculum. The overall goal is to better promote the CWW framework for water, sanitation, hygiene, education and de-worming.[1]

Schools are key to worm control efforts because they provide the setting to treat children and provide health and hygiene education (Mascie-Taylor *et al.,* 2003)

What follows are lessons learned from the first phase of the project – an in-depth analysis of the existing national curriculum. A new School Health Guide will be developed in the second phase to further promote hygiene and education in the CWW framework.

The process

At present, six Cambodian governmental and non-governmental organisations (NGOs) support programs that directly or indirectly prevent and control worm infestation. These are: the School Health Department, the National Malaria Centre, the National Centre for Health Promotion, the Rural Health Department, Cooperation for a Sustainable Cambodian Society, and Sovann Phum. These organisations are working closely with HKI and the MoEYS to provide information about the current curriculum and help develop the new School Health Guide.

The situation analysis that began in September 2009 was conducted to learn about what is being done, how, where, and by whom and to look at how the existing school health curriculum on worm control and prevention has been implemented. Information was collected from four governmental institutions, two NGOs and four primary schools.

Two questionnaires were developed, one for governmental institutions and NGOs and one for directors and teachers at primary schools. Both questionnaires covered quantitative and qualitative aspects of school health activities related to soil-transmitted worms.

Information from governmental institutions/ NGOs was collected on matters such as:

- objectives of the program and nature of activities related to soil-transmitted worms;
- target group, selection process and implementation strategies;
- training activities and technical assistance provided;
- behaviour change communication materials;
- funding and sustainability of program/ activities; and
- challenges related to worm prevention and control.

A child at Poek Ho (Waterfall) school

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Children Without Worms (CWW) and Helen Keller International (HKI)

Launched in 2006, CWW focuses specifically on global treatment and prevention of soil-transmitted worms. The program is treating approximately 20 million children with mebendazole, a deworming medicine, and is working to stop the cycle of re-infection through health education, access to clean water and improved sanitation infrastructures. CWW strives to reach those who are most severely affected or at high risk in countries with limited access to safe and effective treatment. The program is currently active in eight countries: Bangladesh, Cambodia, Cameroon, Cape Verde, Lao People's Democratic Republic, Nicaragua, Uganda and Zambia.

Cambodia was selected by CWW to receive donated mebendazole in recognition of its commitment to worm control. The program has provided more than five million doses of the medicine to Cambodia each year since 2008, enabling the country to reach all at-risk children.

This partnership builds on HKI's successful creation of a School Health Guide for Trachoma Prevention as well as HKI's programs for school health. Prevention and treatment of diseases like soil-transmitted worms and trachoma are integrated into HKI's school health programs because these conditions affect so many school-age children. In schools, HKI can support an integrated set of community-health interventions, health education, dietary supplements and/or medicine, and promote measures to improve hygiene and sanitation practices that can greatly improve disease-prevention efforts.

1 CWW's WASHED Framework is based on the WASH (water, sanitation and hygiene) strategy, which is promoted by many organisations working to improve access to and use of potable water and safe and sanitary latrines.

Information from primary schools was collected on matters such as:

- curriculum content;
- teaching methods and materials;
- human resource development;
- school facilities for prevention and control of soil-transmitted worms; and
- knowledge, attitude and practice of teachers and students.

HKI and the Department of School Health also interviewed school directors, teachers, students and NGO and governmental program managers and representatives on the ground.

Finally, a workshop gathered stakeholders involved in worm prevention and control projects to share the results of the situation analysis, gather ideas to improve the current curriculum, develop learning objectives and activities to increase knowledge and support behaviour change, and to define roles and responsibilities among the stakeholders.

Findings

Over the past decade, governmental institutions and NGOs have been increasingly active in supporting school health programs. However, much work remains to ensure that worm prevention and control efforts are operating in a sustainable way across the country. Key lessons from the situation analysis include:

- Current strategies to prevent and control soil-transmitted worm infections have solid foundations, but improvements are necessary.
- Training manuals and teaching materials focus primarily on general health, hygiene and sanitation. They include only limited information about soil-transmitted worm infections. The National Malaria Centre does provide some specific materials, including posters on preventing and eliminating soil-transmitted worms and teacher guidelines for mass distribution of medicines. However, the materials are not equally distributed among primary schools, and some schools have little or no resources for educating students about intestinal worms.
- Teachers often do not use all of the materials or allot enough time for lessons on health, hygiene and sanitation.
- Most schools lack adequate personal hygiene facilities and materials, including latrines, wells, water filters, rubbish bins, soap, towels, nail clippers, toothbrushes and toothpaste.
- The majority of students interviewed could name one activity that reduces the chance of worm infestation. However, only 18% – less than one in five children – knew that de-worming tablets could be taken to prevent intestinal worms.
- The government has limited technical and financial resources for school health activities and outreach services. In areas with poor road access, primary schools often lack the resources to support good school health programs.
- Government institutions, including schools, have limited staff.
- NGO-supported worm control activities – which are part of larger school health education programs – are effective, but cover only a limited number of schools.

In addition to these findings, the survey shows the importance of carrying out thoughtful research to identify resources needed for public health programs. For example, when representatives from HKI and Children Without Worms first met with the MoEYS to discuss the project, the Ministry identified health education materials as a priority need. However, the analysis revealed that education materials were available, but that lesson plans and time given to teach children about health, hygiene and worm infection were limited. Instead of producing more communications materials that would likely not have been helpful or used effectively, the analysis identified key gaps in the existing curriculum that need to be filled. The analysis therefore emphasised the importance of utilising and building upon existing health education materials, rather than re-inventing the wheel and producing new materials unnecessarily.

Based on our curriculum, we do not have time to learn much about hygiene and sanitation issues. We only learn and discuss a few sessions per year on prevention and control of worm infections. In addition, we have the problem of lack of facilities such as soap, clean water and nail cutters which also contributes to this problem of soil-transmitted worm related diseases.
– A group of students from grade 6 of Chungruk Primary School from Kampong Speu Province.

Children at Poek Ho (Waterfall) school in Kandal province, Cambodia

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Some data from the survey

Table 1 shows some survey results from four schools (38 children and 24 teachers and school directors). The results highlight the need to increase knowledge and understanding about effective ways of preventing and controlling soil-transmitted worm infections among both students and teachers.

Table 1. Knowledge on ways of preventing and controlling soil-transmitted worm infections

Prevention tactics	Answering correctly*	
	Number	Percent (%)
Students (total: 38 children)		
Washing hands with soap before food preparation	30	79
Drinking boiled or filtered water	21	55
Wearing shoes	18	47
Eating well-cooked food	19	50
Washing hands after defecating	18	47
Regular nail cutting	12	31
Taking de-worming tablets	7	18
Washing vegetables well before eating	5	13
Playing in clean areas	5	13
Teachers/Directors (total: 24 adults)		
Washing hands with soap before food preparation	14	58
Drinking boiled or filtered water	16	67
Wearing shoes	15	62
Eating well-cooked food	14	58
Washing hands after defecating	10	42
Regular nail cutting	6	25
Taking de-worming tablets	6	25
Washing vegetables well before eating	6	25
Playing in clean areas	1	4

*Number and % of total who knew that the practice protects against worm infections.

Proper nail care is an often overlooked but important aspect of personal hygiene. Dirt beneath unclipped nails trapping faeces, parasites or other harmful substances can spread a number of infections and diseases, including worm infections. This analysis also assessed the number of students who were wearing shoes properly, a simple and effective measure for preventing infection with hookworm (see Table 2).

The current curriculum for the primary school certainly has some gaps in information on control and prevention of worms with limited time allocation of 10-15 minutes per session. We need detailed information with clear instructions, such as teaching objectives, teaching activities, teaching materials etc. in the curriculum, so that teachers can easily follow when teaching their students. The information on control and prevention of soil-transmitted worms should be in curriculum for all grades of the primary school.
– Ms. Hem Phann, Director of Chambak Primary school from Takeo Province

Recommendations

This review of soil-transmitted worm infection in the national primary school health curriculum has highlighted several key areas for improvement:

- Currently, NGOs are essential for successful school health programs. NGOs should continue their efforts to develop the capacity of school staff. Eventually schools should be able to carry out effective school health and education related to worm infections, without depending on NGOs.
- Communication and coordination should be improved among governmental institutions and NGOs carrying out the school health programs to deal with this issue. Consistent training messages, behaviour change communication materials and monitoring systems should be selected for a standard package of activities.
- NGOs should change their primary school health lessons to include specific instruction on preventing and controlling worm infections. This addition fits into existing lessons on general hygiene and sanitation and will help improve children's overall health.
- Lessons on controlling intestinal worm infection should be added to the current primary school curriculum at all grade levels. Currently, the curriculum only includes specific information on intestinal worms in grade five. More time overall should be given for lessons to improve learning outcomes.
- The national curriculum should have clearer instructions for teachers. Adding instructions about the goals, specific objectives, content, teaching methods, teaching materials and time needed for each lesson will help teachers educate more effectively. Suggestions for evaluating student knowledge should also be included.
- Local health staff should train school directors and teachers about the control and transmission of worms. This will help make a strong link between schools and local health centres. NGOs and governmental trainers should support and train local health staff.
- The links between health centres and schools need to be strengthened to ensure that de-worming tablets are distributed to primary schools. This review found that some schools do not receive the medications.

Table 2. Caring for nails and wearing shoes

Name of school	Number of students		Total students	Nails			Shoes		
				Both sexes					
	Male	Female		Good	Fair	Poor	Good	Fair	Poor
Chung Ruk	62	50	112	13%	29%	58%	12%	80%	8%
SovannKiri	58	59	117	25%	49%	26%	28%	65%	7%
Cham bak	70	46	116	46%	33%	22%	29%	54%	16%
Ang Run	32	48	80	29%	61%	10%	16%	69%	15%
Total	222	203	425	28%	43%	29%	22%	67%	11%

- More communication materials, latrines, soap, water filters, and other important resources need to be provided to primary schools so that students have the opportunity to change their behaviour, rather than simply having increased knowledge about soil-transmitted worms.
- NGO and government-led water, sanitation and hygiene programs (WASH) should consider the importance of reducing worms in their school WASH interventions, rather than only focusing on reducing rates of diarrhoea.
- A strong recording and reporting system should be put in place to monitor de-worming tablet coverage. Training should be provided to teachers to improve their capacity and raise awareness about the importance of recording this information. Such a system will guide future efforts to increase real coverage by identifying problem areas.

I am very happy to hear that there will be an effort to revise the current teaching curriculum of the primary school for prevention and control of the worms. I think current curriculum has limited information on these issues.
– A teacher from Grade 4 of Chungrum Primary School from Kampong Speu Province

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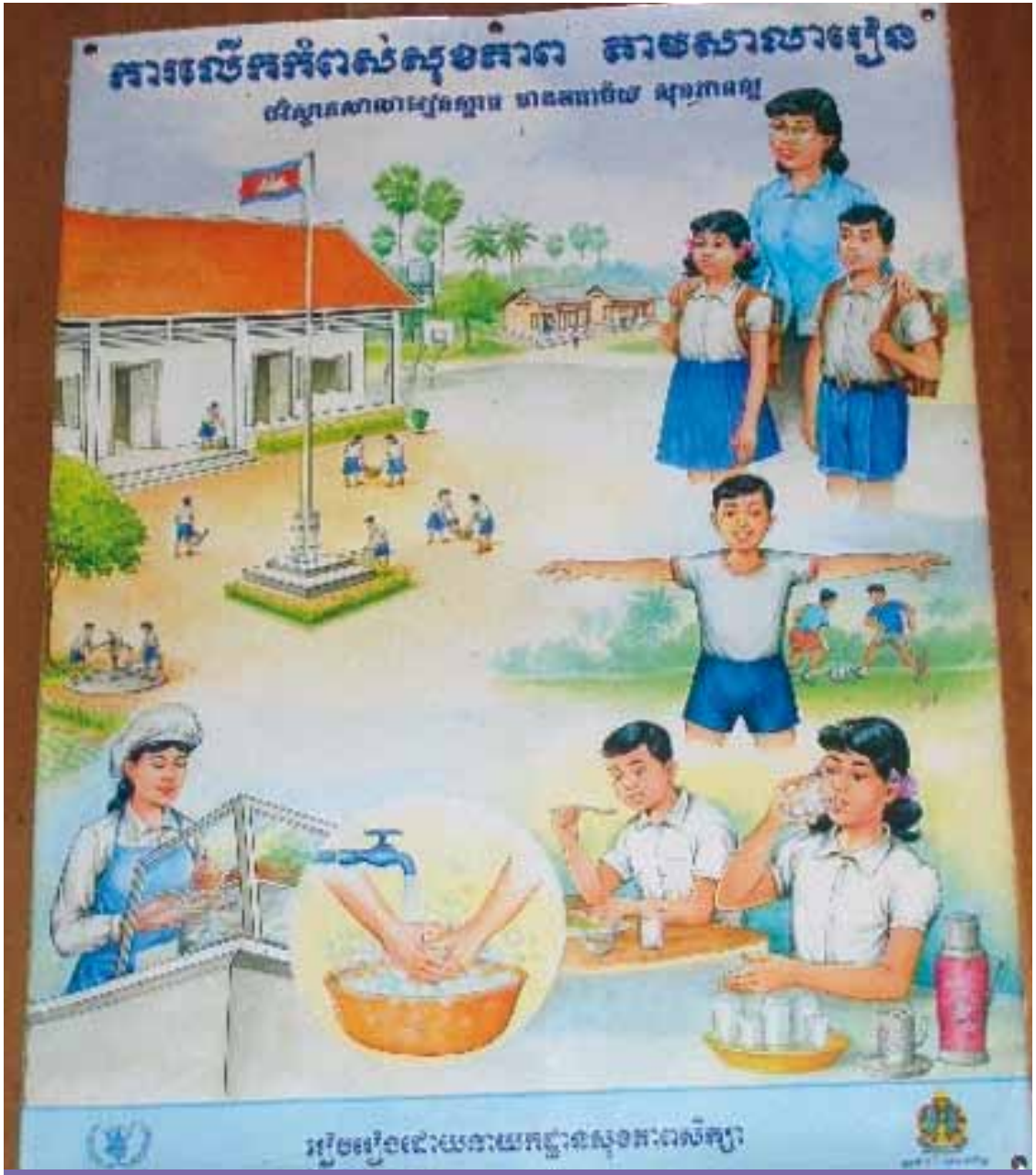
Children at Poek Ho (Waterfall) school in Kandal province, Cambodia



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A poster highlighting the importance of hygiene

Children at Poek Ho (Waterfall) school in Kandal province, Cambodia

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Moving Forward

This analysis focused on curricular materials relevant to hygiene, sanitation and control of worm infection. The project identified groups working in school health in Cambodia and learned more about their activities. It developed a package of school health messages to be included in a national curriculum. Over the course of the next year, the program will:

- Begin its second phase in which the curriculum is developed, distributed and pilot tested in a number of regions.
- Form a team of key representatives from the governmental organisations, NGOs and schools that participated in the first workshop to contribute to curriculum changes. This team will also review and approve the new curriculum before it is tested in primary schools.
- Field-test the revised curriculum, conduct an evaluation and make changes as needed.
- Continue to have workshops and other evaluation activities to share ongoing results.
- Assess impact of the revised curriculum on students' knowledge of the control of soil-transmitted helminth infections.

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